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GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED
TO BEES
AND HONEY
AND HOME
INTERESTS.

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No. 6.

STRAY STRAWS FROM DR. C. C. MILLER.

PLEASE RISE and tell what "an average crop" means.

DISHES PREPARED with honey at one of Nero's suppers are said to have cost \$160,000.

BEE-KEEPING is to be taught at the University of California. Prof. Cook lives in California.

THE LANGDON NON-SWARMER is a great success in at least one direction—it keeps down drones.

THE HUSH-UP treatment for adulteration seems to be given up, and "fight" is the word all along the line.

MICHIGAN, Vermont, Rhode Island, California, Nebraska—not a bad list of States with experimental bee-stations.

FIVE CARLOADS of glucose were used by one firm in adulterating honey in California, according to Mr. Levering, in Cal. convention.

THE RIGHT SPACE between top-bars being asked for in *A. B. J.*, I was surprised to see that more of the repliers agreed upon $\frac{1}{4}$ inch than upon any other distance.

WASPS have the credit of making the break in fruit, which is followed up by the bees. With me it's birds and not wasps that make holes shaped like dumb-bells, in grapes.

THE KING-BIRD gets a good word in *A. B. J.* from Will A. Bryan, taxidermist in Iowa Agr. Coll. He thinks it eats enough noxious insects to pay for the few bees it gobbles, and eats bees only when other insects are scarce.

I THOUGHT I had seen sections as smooth as they could be made. But now come some from Medina with not a scratch of sandpaper or mark of plane to show they were made smooth.

Just looks like they "grewed" smooth. What a world of progress it is!

LESS BRAINS are said to be needed to raise extracted than comb honey. I'm getting to doubt that. A viler article of extracted can be thrown on the market by the novice than he can possibly get the bees to seal up in comb.

ROBBERS. Pres. McIntyre used a trap, removed the hive that was being robbed, put in its place the trap, and caught all the robbers. At night the robbers were released, and seldom commenced operations the next day.—*Cal. convention report in A. B. J.*

BRITISH BEE-KEEPERS are so stirred up as to the importation of foreign honey that the *B. B. J.* says, "If we devoted space to all the copy sent for publication, referring directly or indirectly on the foreign-honey question, . . . there would be little room for aught else."

VANILLA seemed to be used in flavoring some honey I took this year, the finest I ever tasted, and I sampled some of the same that Editor York raised. A sample sent to Medina was pronounced extra clover, but I never tasted vanilla in clover before. Wish I knew what it was.

QUITE AN IMPROVEMENT in the pages of *GLEANINGS* to have the name of the author at the head of an article. The old way was much like introducing a speaker to an audience after he had finished his speech, or putting the name of an author at the end of his book.

SAY, RAMBLER, from the way Eugenia holds up her chin, she'll make you dance and skip to another tune when she settles down on you. You'll not be an "eversteamed friend," you'll be a "roasted" one. [How do you know, Doctor? Have you been there?—ED.]

ONE-SIXTH of an inch is about the right size for perforations in queen-excluders. That's $\frac{166}{1000}$, and 165 to 170 seems agreed on. One-sixth is easier said and remembered. [We have wish-

ed before that we might have an easier figure to remember, and here we have it. Just $\frac{1}{4}$ of an inch.—Ed.]

I DID SUPPOSE there was at least one place where I could have the last say; but the editor seems to be so overstocked with those "everlasting footnotes" that he has to pack some of them away in straw. I don't know what I can do unless I get a new editor with no footnotes attached.

FUN WAS POKED at me for talking about making foundation on a press without sheeting. On inquiry I find that a metal press, the Riet-sche, has been in use for ten years, the wax poured in the press without sheeting, and that 6000 such presses are now in use. Will *Review* and *Progressive* please correct?

THE PLAN to estimate the comb-honey crop by the number of sections sold by manufacturers fell through because all would not tell, and I'm not at liberty to give any of the partial figures sent to me; but one thing I think I may tell; and that is, that I was astonished at the large amount manufactured by some of what I thought the little concerns.

FRIEND A. I., you say of that new forage-plant, the Wagner pea, that you are properly excited about, "We do not know whether it yields honey or not." If you will rake over the Straws in Jan. 15th GLEANINGS, you will find it is "a new honey-plant that's getting a boom across the water." According to accounts in German bee-journals, it's well worth a trial.

It's QUEER that in Germany all honor is given to Dzierzon and none to Langstroth, and in America the case is reversed. If I am not mistaken, the two great men worked independently, each knowing nothing of the work of the other, and both are entitled to the highest praise. I'm glad for the sake of the younger bee-keepers to see that sketch of Dzierzon by friend Mathey.

THANKS, Mr. Editor, for the item (p. 195), "Confusion in the use o terms." But in the 9th line, please say "a" instead of "the same." For the colony before swarming is not the "same collection of bees" as the swarm. Now let's stop saying "rabbet" when we mean "support," and "hatch" when we mean "emerge." After the hatching from the egg there's no other hatching. [We will agree to the correction on the word swarm, but we protest *hard* against trying to change the name of two well-known apicultural terms. They have been in use too long to change; in fact, it can't be done now. We say, the "sun rises," but the phrase is as inaccurate as rabbet for support. But why should we change? The use of "rabbet" and "hatch" causes no confusion. We would try to change a word only when, for example, like swarm, it makes confusion. Some of John Phin's definitions are more nice than practicable.—Ed.]



EXTRACTED VERSUS COMB HONEY.

THE SHALLOW EXTRACTING SUPERS; MORE THAN TWICE AS MUCH EXTRACTED AS COMB.

By J. A. Nash.

My first extractor—the "Peabody"—looked like the family wash-boiler mounted on a pivot. A peg, semi-centrally located on top of the can, served as a handle, and a comb was hung in each end. As compared with modern extractors this was decidedly crude; but it was a great improvement on the first extractor.

This was before the days of sections, and our apiary was arranged to produce comb honey in small boxes with glass sides—six of these covering the top of a Langstroth hive. Here I got my first lessons in tiering up.

For many years I have produced comb and extracted honey in the same apiary, though the greater part of the time the comb honey has been a side issue. I have kept accurate accounts of profit and loss, and know that the production of extracted honey is more profitable with me than comb.

Now, while I have had a single colony store a greater amount, I have never been able to make a large number average more than 50 or 60 lbs. of section honey to the colony, while colonies in the same yard, run for extracted honey, have averaged from 125 to 160 lbs. I will say right here, that, when I make up my average of surplus, I deduct the honey in combs (sometimes a large amount) kept for feeding, and speak only of what is actually surplus and for sale. I seldom if ever molest the brood-chamber when extracting, but often put combs of sealed honey below, as bees are not apt to crowd the queen when plenty of room is given above, but the contrary is often the case.

In poor seasons the difference between comb and extracted is, with me, still more marked than in good ones, as I have several times obtained, by the use of shallow extracting-cases, 20 to 30 lbs. to the colony, when the foundation in sections in the same yard would be merely drawn a little, or perhaps a few sections partly filled, and therefore unsalable.

Of course, the bees run for extracted honey were provided with empty combs. Where a part of the apiary had to build combs above, they usually stored a little more than those working in small boxes or sections, an illustration of the fact that bees will build more in one large box than in several small ones.

I clip all my queens, and, with colonies run for extracted honey, I have little or no trouble with swarming. The hives are close to the ground, and a board leans against the alight-

ing-board of each hive, permitting the return of the queen in case of swarming. Once in a while she enters another hive, but what is the odds? The bees are there to rear another instead of decamping to the woods, and the next season you clip in that hive a young and vigorous queen.

By clipping queens, using shallow cases filled with empty combs and self-spacing frames, I can care for 400 colonies, and do it easier than I could handle half that number storing in sections, as bees never swarm much if supplied at the proper time with empty combs.

The extracting is done at the close of the season, and there should be empty combs on hand to hold all the honey each colony can gather in a good season—see page 882, 1893. Another thing, in case of fall bloom, bees are often slow about building new comb in cool nights. Here the empty comb comes in play again. I have often had colonies take the "swarming fever," and swarm out from under the sections, when other colonies worked steadily on in the extracting-cases.

Perhaps some one will say, "Mr. N., you don't know how to manage a comb-honey apiary." I most candidly admit that this may be true; but I will also say that I should prefer to raise the comb honey exclusively if I could make it pay as well as extracted.

Monroe, Ia.

[Some later estimates seemed to show that only a little more extracted than comb could be produced, and some have gone so far as to say that *no* more can be produced. We suspect that the truth lies between friend Nash and those who take the other extreme. Under average conditions, from the very nature of things, more extracted than comb must necessarily be produced. For the latter, the bees must work in smaller compartments—a condition not exactly to their liking—and must also draw out the comb; i.e., make storage room as well as to store it. In the case of the former, combs are, or should always be, in readiness, and all the bees have to do is to store it, and that, too, in roomy combs.

This is a practical question, and will bear further discussion.—Ed.]

ENTRANCES TO AN APIARY.

DIAGNOSING COLONIES FROM OUTSIDE INDICATIONS; SOME GOOD SUGGESTIONS.

By C. W. Dayton.

Placing hives near together saves travel, and land where space is limited; but when every thing is considered, it is advisable to space them about seven feet apart, and face the entrances in one direction, which is, toward the honey-house or work-shop, that all the entrances may be seen at the same time.

Thus arranged it forms what may be termed a face or countenance for the apiary, and is of equal importance to having the scholars in a schoolroom facing the master. If a queen is lost, the store of food is gone, or a colony is preparing to swarm, there is usually an indication of it in the maneuvers of the bees at the entrance. Much can be learned as to the state of the colonies by walking along and glancing at the rows of entrances in the evening. If some colonies roar louder than others it will be found that it is because they either are stronger in bees or are gathering more honey; and it is not always necessary to take the combs out of the hives, but, it may usually be determined by the dropping of loaded bees at the entrance, or the appearance of bits of new wax on the combs, on simply removing the covers.

When it is dark, and all the bees have retired within the hives, and a colony is heard to mutter in a restless fashion, it should be made a subject for examination the next day.

Again, in the early morning it may be noticed that some colonies are exceptionally lively at the entrances, and have brought out dirt, pieces of comb, and dead bees. This may indicate that the brood-space or space for new honey is being enlarged. Strength of colonies, or the evaporation of honey, is also denoted by the amount of moisture which condenses on the alighting-board—the breath of the colony, so to call it.

A few bees at the entrance, in a disturbed mood, when all the rest are still, may be caused by the loss of their queen, which may be carried out and dropped near by, and be easily discovered in the morning; and, later in the day, when the bees come to fly, a little bunch of "mourners" will collect around the dead queen, and more bees than usual stand idly about the front of the hive.

As the apiarist reviews the colonies some morning, he might be heard to remark in surprise, "Well, those bees in this hive are rustlers," noting an entrance where the bees are passing out and returning much more lively than at others. Examination of the combs shows that they are getting honey or pollen, continuing right on, even in the rain—utilizing every minute of sunshine, while many other colonies are doing nothing, and are slow to put on business airs when the sun shines and honey has become quite plentiful in the flowers.

In the season of 1891, while mowing before the hives early in the morning, one hive was noticed where the bees seemed to be *always* out. Continuing to rise earlier and earlier, these bees were found dropping down upon the alighting-board with heavy loads, while it was yet quite dark—so dark that the incoming workers could not be seen until they had alighted at the entrance. They held out thus industrious all through the fall; and where no other colony laid up above two or three pounds of fall

honey, this colony stored between thirty and forty. When one-half or less of the entrances in the apiary are visible we do not record these exceptional colonies, because of the liability of the other half containing several even more industrious ones.

By observing the progress of the colonies all the time, from early spring up to the honey-harvest, the surplus-receptacles may be placed on the right colonies at the right time instead of watching the progress in the receptacles and making numerous changes and surprising mistakes after the harvest begins. The peculiar traits of the different colonies from which to rear queens will also be known.

[Mr. Dayton makes an excellent point here; viz., entrance diagnosis from day to day will determine better than any other means what colonies will be likely to require supers before others.—ED.]

In no country is this study of the bees more neglected than in California. If the bees are not managed entirely by hired help, the owner seldom spends more than four or six weeks in the apiary, during the harvesting of the annual crop—a season of fatiguing labor, stings, and perspiration. The apiarists, or bee-owners, are mostly nurserymen, fruit-growers, shoe, harness, and dry-goods merchants, grocers, hotel-keepers, tradesmen, dairymen, stock-buyers, small capitalists, etc. The bees, fixtures, and land occupied is called a “bee-ranch.” The prominent distinction between a ranch and a farm is, that a ranch is a place where laboring people and animals stay, while a farm includes a home. An apiary *may* be a place where bees are kept for love, study, and improvement. A ranch is a place where bees *stay* so long as they are a profitable speculation. If they are black bees it is all the same—stings belong to the hired help, and starving colonies to dry years, not always.

The bee-keeper who spends no more than six weeks in a year with the bees can not learn enough about them to create a desire for the improvement of stock or fixtures, any more than the boy can get an education by attending school but six weeks in the year.

In my last article I said considerable about chapparral, thinking chapparral and greasewood to be one and the same plant, as I had several times been told. I have since learned that they are somewhat different. Wherever I used chapparral it should be changed to greasewood. Chapparral grows there, but not so much as greasewood (or chemise).

Downey, Cal., Feb. 18.

[The main reason why we have the entrances face different directions at our apiary is, that the bees may be better able to mark their entrances. The similarity of the grapevines, the absence of other foliage or stumps, and other distinguishing objects, render this necessary; but in many localities a stump here, a shrub here, a mound there, trees of various sizes

throughout the apiary, serve to mark each locality, and hence there would be a big advantage in having the entrances all one way. We have diagnosed colonies at the entrances in much the same way as Mr. Dayton speaks of; and was and is quite a hobby of ours.—ED.]

CALIFORNIA ECHOES.

By Rambler.

When that dairyman gets the honey-and-butter scheme to going, I wonder if he will also persist in mixing glucose with it. “No rose without its thorn.”

Mr. Heddon thinks we ought to keep very quiet about this adulteration business. Mr. F. H. Hunt also thinks there is a great deal too much said about it.

If California has produced 5,000,000 lbs. of honey, it has been made into 10,000,000 by the addition of glucose, and the addition has been put on by the dealers.

The use of barrels or 60-lb. cans for marketing honey holds out an inducement for the mixing process. This inducement to manipulate would certainly be less if the honey were put in 5 and 10 lb. packages. Can we make a break, and put up our honey for the consumers instead of the dealer?

That is a practical question advanced by Mr. Heddon, wherein he writes of the maximum and minimum cost of production. Where does it cost the most, and where the least, to produce honey? From the number that are coming to California to produce honey, this must be the minimum country.

In your answer to F. L. S., of Minnesota, in relation to net profit per hive, is perhaps as good a guess as any one can give. One hundred pounds per colony of extracted honey is considered a light yield here; but taking it one year with another I think 150 lbs. would be the average yield, which would make the net profit a little more than you put it.

Cigar-stumps in a gill of boiling water will route like enchantment an army of robbers; so says a Straw. Robbers carried off for us 15 colonies of bees, 11 cans of honey, 20 lbs. of beeswax, and an old coat. Wish we had known about that cigar-stump plan. No use crying over it now, though; will know how to proceed next time. Many thanks, Dr. M.

What a cold time that was over in Texas, as recorded in the *A. B. J.*, by Mrs. Atchley! Ice an inch thick! That's away ahead of semi-tropic California. We thought it very cold here, with ice half an inch thick. Some of our oranges were spoiled; but with an inch of ice, and a blizzard, we should have all perished. Come to California, Mrs. A., where we have a salubrious climate.

AN APICULTURAL RAMBLE IN RUSSIA.

By Karl Rudolph Mathey.

Like a bee that gathers honey diligently all day, and returns home at night wearied, laden with honey and pollen, so I came home each evening to my dwelling, richly laden with intellectual treasures which, throughout the day, I had gathered in cities, villages, woods, and fields, in churches, and during hours of meditation, in public places and in private houses. The evenings were spent in distilling the newly gathered material. The results attained were sketched down in a book and rewritten.

In Europe the largest state is Russia; and as I have already begun with the apiculture of

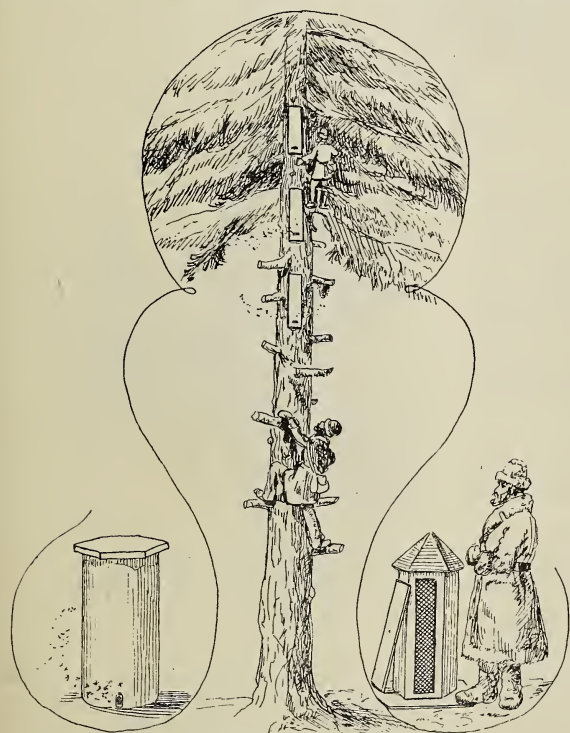
ered honey is let down from above and taken to the house, where the clarifying process begins. The honey is first laid in a sieve, through which it trickles, and this is put on the market as "drop honey." That remaining in the combs is put into a kettle on the hearth, and cooked out and used in various ways for culinary purposes, but more particularly in the manufacture of "honey brandy" and "mead." At the left of the picture we see a colony rigged up for summer.

As the pasturage for the bees in the woods opens earlier and lasts later, it follows that this sylvan apiculture is much more profitable than that carried on in the open fields. In the forest there are many alder, hazel, and other trees, from which the bees, even as early as the middle of March, can gather pollen, while, on the contrary, in many places in the open country this early pasturage is entirely lacking, or, at best, hardly to be found earlier than April; hence earlier swarms in wooded localities may be expected. The yield from such hives is always large as compared with the regular culture of tame bees.

Now, as the owner of such forest-bees can not protect them from enemies and thieves, it has been found advantageous to locate them near by, and arrange them so that the bees may be sheltered, and the honey cut out conveniently.

Russia has also many great bee-keepers. Among the most prominent may be mentioned the Prussian nobleman Alexander Michailowitsch von Butlerow, Professor of Medicine and Chemistry in St. Petersburg, who died in 1887. Dr. M. was the founder of the movable system of frames in all Russia. Through the labors of Dr. M., his countrymen were enlightened as to bees, and their habits and anatomy.

In order to enlighten his fellow-countrymen as to the merits of rational bee culture and a movable frame, Dr. M. wrote a bee-book entitled "The Bee and its Life; the Chief Rules of Rational Apiculture Applied to Northern Climates." The book awakened great interest in Russia, and was crowned with the golden medal; and the Royal Economic Society of Russia scattered 20,000 copies. It has also been translated into Polish. Dr. Michailowitsch had, upon his old native place in Butlerow, an apiary with over 160 colonies, and carried on the raising of queens there extensively, and this apiary was managed by himself. He cultivated all known races, especially the Italian and Caucasian; and his hives were also samples from all parts



RUSSIAN SCENE.

that country, we will first, by word and picture, consider Russian forest apiculture.

Here is to be seen, true to nature, a Bashkir bee-hive in the forest; and the reader who has been kind enough to follow me so far will here see the bee-keeper taking a look at his bees in winter, to see whether or not the provisions are lacking in either hive. Let us look at the tall tree a little more particularly—the one the bee-keeper has begun to climb in order to examine his bees, which are located in three dug-out cavities above; and woe to him if, on his way down, he slips from such a height. By means of a rope made fast to a wooden cask, the gath-

of the world; but they were modified outwardly so as to correspond to their cold northern climate.

Medina, O., Feb. 5.

RAMBLE 104.

RIDES AND TALKS; THOSE BIG CALIFORNIA
YIELDS OF HONEY.

"Hello, Mr. Rambler! There was a stout-looking fellow inquiring for you the other day. He had a double-barrel shot-gun and a whole row of loaded cartridges around his body; didn't seem to have blood in his eye, but still I thought he might be a dangerous fellow."

"Oh! no, neighbor; that fellow is not dangerous. That was a bee-keeping friend of mine who lives in East Riverside, and his name is Unterkircher."

"What! Unklekitcher?"

"No, no! Unter—kircher."

"Wall, I declare! wonder if that was the last name given to man."

"No, neighbor, there seemed to be several names sort o' tangled, and this is one of them. It is a German name. Unter means under in English, and kircher means kicker, I guess. We'll call it that, anyway—Underkicker."

"But, neighbor, what's in a name? According to Shakespeare, the rose would look just as pretty if called a burdock."

"That stout-looking fellow has done the under kicking on an apiary during the past season, and kicked out over 15 tons of honey."

"Je-whittiker! is that so? Well, now, he is some pumpkins;" and my neighbor went on his way, muttering "Underkicker—15 tons of honey—Jerusha!"

I was in hopes to have this 15-ton honey-man at the convention in Los Angeles; but la grippe laid him low about that time, and I had to make preparations to leave without him.

It was my intention to get off at an early hour the day previous to the convention. I had some fears of being intercepted by a constable. After going around with Mr. Moffat and the officer, as described in Ramble 102, they considered me a good witness; but matters and things seemed to go wrong that morning. When attached to the cart, Vixen, instead of starting off in a civilized way, sat down. After several other antics I raced her around the house and was just ready to start for the railroad when Mr. Hunt put in an appearance. Matters pertaining to beedom had to be considered, when, of course, the constable had to put in his appearance with his subpoena, and I missed the morning train. I hustled for the next one, however, and caught it, and about dark I was landed at the door of our treasurer, Mr. Woodbury, in Verdugo. I found Mr. W. had completed his tunnel for water that he was at work upon when Mr. Corey and I visited him. A windmill

was merrily whirling, pumping water for various uses. No mishap had marred the comfort of that tunnel except the entrance of a skunk, which had odorized the water and surroundings to a considerable extent for several days.

After the buzzing of our convention was ended, and the bee-keepers had gone to their hives, as the dailies rendered it, I accepted the hospitality of Mr. Brodbeck, and prepared to accompany him to his residence in South Los Angeles. Mr. B. is not a very boastful man; but since he had partaken of my delicious flap-jacks he had thrown out various tantalizing hints about his superior cooking, even if he was a benedict, and he boldly challenged me to come and see. Before entering the electric car he led the way to a shop kept by an individual termed a caterer. I kept my eyes open to see what such a person was made for. The various mottoes on the walls all bore gastronomic sentiment—"Hot boiled tongue," "Quirks of sausage," "Corn



pones," "Doughnuts, such as your grandma made." The more of them you read, the hungrier you get. I had just concluded to cater on some nice sliced ham when Mr. B. drew my attention to the fact that he had more cater bundles than he could manage, and I came to his rescue. A caterer's shop, as I understand it, is a place where they create an aching void in your stomach, and then sell you cooked food, sliced and mashed, ready to fill said void. When Los Angelans think of getting a regular meal they say, "Shall we cook or cater?" In this case, with my friend it was cater; and when we arrived at the Brodbeck mansion, and Mrs. B. had returned from the school near by, where she is a teacher, Mr. B. spread out his prepared food on the table, and exclaimed, "There, Mr. Rambler, see what a cook am I," just as though catering can compare with the

self-sacrificing bachelor plan. There was no boasting at our breakfast, for Mrs. B. seemed to be in command, and the cookery was more domestic and anti-cater.

Catering is carried on extensively in Los Angeles; but in our rural towns catering is in its embryo condition. There's merely a plain sign, "groceries," over the door, and inside there are more babies and dirt than eatables, and you get a sudden desire to cater somewhere else.

Mr. B. still drives the horse that has done such good service in his Arrowhead apiary. His city life has not been very laborious, and his ribs were covered with several inches of adipose (the horse's ribs, not Mr. B.'s). While helping Bro. B. harness, my previous experience with mules had made me shy of heels. I avoided that portion of the horse; but Mr. B. quickly observed it and remarked, "Don't be alarmed. Prince never kicks. Why, a dozen dogs may bark all around him—he won't mind them."

We had a pleasant ride through some of the principal streets of the city; called upon Messrs. Bennett, who are dealing in supplies; also called upon G. G. Wickson & Co., who have a full line of supplies from the "Home of the Honey-bees." The Cowan extractor was examined and whirled, and we noted that the prospect for a large sale of them in California was good for the coming year. Messrs. Wickson's store, being at 221 South Broadway, near the business center of the city, is something of a rendezvous for bee-keepers when they come to town, and there's always something apicultural or agricultural to look at.

Our rides and our walks were well occupied in talks of bees, honey, and conventions, and the future prospects of our industry. It seemed that the honey business was getting on well in California, when our producers, like W. T. Richardson, could report 64 tons of honey, and a dozen more well toward it; and it was also quite marked that there was no secret about it.

The Rambler well remembers that, in his native State of New York, it was the practice and the teaching of a number of the large producers of honey to suppress and keep secret the amount of their honey-yields. The idea was, if you have a good thing, hold fast to it, and keep everybody else out. The plan works successfully to drive people out; but a poor plan by which to build up or settle a country. There has been a question recently raised as to the respective place California or New York should occupy in relation to honey production. If New York wishes to make good its claim to the greater amount, the honey-producers, notably of Mohawk, should come out of their shell and put their yields alongside ours; then there will

be some chance to get at the real amount for the State.

It occurs to the Rambler that the question can be illustrated by the old-fashioned see-saw, where the *see* is on the part of New York, for they are elevated. Coggs shall seems to be the next man to come over to us. The California end hides nothing under a secret. Come over,



gents, and enjoy the open-handed liberality of our genial clime. There's room for 300,000 more.

After Mr. Brodbeck and I had enthused about bees all over town we returned to South Los Angeles; the big horse actually put on a 4.99 gait, and, when near home, joyfully kicked up his heels *a la* Vixen. No doubt there was an understanding between horse and owner on purpose to surprise the

RAMBLER.

ALSIKE.

CROSS BEES; CORRECT SPACING OF FRAMES.

By M. W. Shepherd.

The article of M. M. Baldrige, "Does Alsike Clover Pay?" should be answered yes; it makes better hay and pasture than do the red clovers; it furnishes a large amount of honey for the bees to gather, and it does not winter-kill as the red clover does. Its long fibrous roots hold it in the ground when red clover will have no root-hold at all.

We should like to ask Dr. Miller if he ever killed a queen to get rid of cross bees, and found that the progeny of the new queen were crosser than ever the others were. Also, is it generally the case that, if a queen does not get fertilized until she is ten or fifteen days old, her progeny are cross and disagreeable to handle?

On page 94 there is an article on "How to Advertise Honey." The very best advertisement is to sell nothing but what you can put your guarantee on first, last, and always. Such advertising always has a tendency to create a demand beyond the supply, while an advertisement covering a whole page would not hold a good market for a poor article for any length of time.

The correct spacing of frames is a subject of much interest to the bee-keeper, and also a subject on which there is a very wide latitude of opinion. "Major Shallard" tells us to space our frames $1\frac{1}{2}$ inches from center to center, to prevent bridging and bracing. Several years ago J. E. Pond, in GLEANINGS (I think), told us to space frames $1\frac{1}{4}$ from center to center for the purpose of causing the bees to enter more readily the surplus-apartment. At that time but little attention was given to bridge and brace combs, but we soon found out that close spacing did cause the bees to enter more readily the boxes; and we found that we were not troubled with bridge or brace combs to any great extent. We also found that close spacing caused combs to be built clear down to the bottom-bar of the frame, and we are inclined to the opinion that close spacing has a tendency to restrict the raising of drones; yet as to this last we do not feel confident of the truth of the idea.

Don't drop those footnotes.

Rochester, Ohio, Feb. 10.

[This question is discussed further under Trade Notes.—Ed.]

SYRUP FOR SPRING FEEDING.

FULL PARTICULARS ON HOW TO MAKE IT
WITH A PERCOLATOR; HOW TO
MAKE A PERCOLATOR.

By Dr. J. T. Beall.

How and when to feed are questions which I shall leave to those of larger and riper experience to answer, while I shall attempt to offer some suggestions upon that other but not less important phase of the question, *What shall we feed?*

Sugar syrup seems to be the most available material for the purpose; but there are various objections to its use as ordinarily prepared. I am satisfied that the mode of preparation which I shall now attempt to describe (but for which I do not claim originality) will overcome many if not all of these objections.

THE APPARATUS.

Procure a five-gallon tin can having a honey-gate at the bottom. Punch three or four very small holes, about equal distances apart, one and a half inches from the top of the can. For convenience we will call this can the receiver. Now have another five-gallon can made so that it will fit into the top of the receiver about one inch. The bottom of this can (which we will call the "percolator") should be made in the shape of a funnel, with a slightly tapering nozzle one inch long and $\frac{3}{4}$ inch in diameter at the outlet. Into the nozzle of the funnel fit a cork having several vertical grooves $\frac{1}{8}$ inch deep cut in its circumference. Now pack the funnel end of the percolator with a good quality of cotton previously saturated with water, and

well squeezed out. A loose-fitting cover completes the percolator.

THE PROCESS.

Fill the percolator about two-thirds full of granulated sugar, and then pour in cold water until the can is about full. Soft water is preferable. The first half-gallon of syrup which passes into the receiver should be returned to the percolator, as it will be too light. All that is necessary now is to keep pouring in sugar and cold water occasionally, and to draw off the syrup as it accumulates in the receiver. Always keep enough sugar in the percolator to cover the cotton to a depth of about two inches. It is not necessary to weigh the sugar nor measure the water. Just keep up the supply of material, and the apparatus, like the Kodak, "does the rest."

THE PRODUCT.

Technically this is a saturated solution of pure sugar. It is a clear, clean, transparent liquid, having a specific gravity of 1.356. It is perfectly stable in any climate, will never sour nor granulate. It is heavier than any stable syrup that can be made by heat, and it is never overdone nor underdone. The heaviest syrup that can be made by heat (the official simple syrup of the U. S. Pharmacopœia) has a specific gravity of 1.317, and is liable to ferment as well as to deposit crystals.

The slight yellow tinge is due to the fact that, as the syrup passes through the percolator, the ultramarine (which is used by sugar-refiners for substantially the same reason that the laundress uses indigo) is left behind, and will be found in the cotton packing.

Just how inimical this substance is to the bee economy I am not prepared to say; but I feel safe in asserting that, as Jake Smith would say, "it doant do no pertickler good." I am convinced, however, that the most deleterious substances found in sugar syrup, as usually made, are the result of faulty methods of manufacture.

This apparatus can be placed in any out-of-the-way corner, and requires very little attention after once "getting the run of it." Unlike the old method of making syrup on the kitchen stove, there are no fires to keep up, no dauby, sticky utensils for the wife to clean, no burned fingers, and no "swear words."

The cotton, which should be of the best quality, must be renewed occasionally; but one packing will be sufficient for at least half a barrel of syrup. Although this syrup comes drop by drop, the process goes on, with unvarying regularity, 24 hours every day; and a few minutes' attention twice or three times a day is all that is required. By having the sugar-barrel and water-supply convenient, and arranging a barrel or other suitable receptacle under the honey-gate, the labor is minimized to the last degree.

To any one who may be inclined to think this

process too slow I have only to say, try it and prepare for a pleasant surprise. Lastly, this syrup is of such a consistency that it is immediately available for use by the bees, requiring no evaporation after being placed in the cells.

Ontario, Ohio, Feb. 8.

[We have never made syrup with a percolator; but as the doctor seems to be perfectly familiar with the subject we have decided to give it a test. The trouble of using heat, boiling over, soiling stoves, etc., is enough to warrant every one giving the plan a trial.—Ed.]

MANUM IN THE APIARY.

THE LANGDON NON-SWARMER NOT A SUCCESS WITH HIM LAST SEASON, AND WHY.

By A. E. Manum.

"Now let me see, Scott. I believe you asked me before dinner how I liked this non-swarming plan, and if I could recommend it to others. My answer is, that one season's trial of a new method of management is hardly sufficient to test thoroughly its real worth, and determine upon its real practicability. As the seasons vary so much it is hardly safe for the apiarist to take a decided stand for or against any thing new that may come to light in apiculture. I have misjudged new ideas and theories so many times that I have learned to be very careful, and to weigh all things before adopting or laying them aside. But so far as I have tested this new plan I am not favorably impressed with it. I have, however, experimented more or less the past three years on a plan of my own, the principle of which is very similar to this, but without attaining perfect success, though I am hopeful that I may be more successful next season, as I aim to try it again, with some new additions to the plan I adopted last year."

"Did any of these 16 colonies swarm or offer to swarm?" asks Scott.

"Yes. Six of them built queen-cells, and two of these six swarmed. It happened in this way: On two of the stands—each occupying two colonies—the colonies, four of them, were of equal strength, all being strong, and all prepared to swarm, each one starting queen-cells while they had the bulk of the bees from their companion hive; and upon reversing the force of bees the reduced hive did not destroy their queen-cells soon enough to admit of giving them the working force before their companion colony cast a swarm. Hence, here lies the difficulty: When two colonies, of equal strength and advancement, are worked together while reducing one to prevent it from swarming, the other will swarm; but where one is strong, and the other only medium, or one is a week behind the other in the preparation of swarming, the plan will work completely to prevent swarming; but the apiarist must be on the alert, and at-

tend to business; and, besides, he must know the exact condition of his bees at certain periods."

"How about the storing of surplus? It is claimed that, by this method, more honey will be stored."

"Yes, I know that is the claim set forth; but that has not been my experience, but, rather, the reverse. These 16 colonies have not given me any surplus, while my other bees in this yard have averaged 38 lbs. per colony. This fact has puzzled me more than any other one thing in connection with this plan. The shifting of the bees from one hive to the other every five or six days seemed to demoralize them to the extent that the storing of surplus honey was out of the question; and, moreover, you will observe that they are very short of stores, even in the brood-chamber—so much so that I must very soon feed them unless buckwheat favors us with a fair yield."

"I suppose that, since these colonies have retained their queens throughout the season, they have carried a large amount of brood, which doubtless accounts for their being short of honey, while your other colonies have been queenless a good part of the time during the honey-flow, and have, consequently, carried less brood, and have, therefore, saved the honey that the rearing of brood would have consumed," says Scott.

"Yes, that is correct in theory; but in this case it has not proved correct in practice, since the queens in these 16 colonies have not deposited eggs to the extent that would be expected. Why this is so I am not able to say, unless it be that the bees and queen in the reduced colony, finding themselves so weak in numbers, and unable to care for more brood, destroyed all eggs, thereby preventing all development of brood from that source; while the queen in the colony having all the bees, would be expected to fill at once the empty combs with eggs after receiving the full force of bees from the other hive; but this is not the case to the extent we should naturally expect, owing to the fact that this queen had so recently been deprived of the working force where her egg-producing organs have received a check so that she hardly gets in good condition for laying when receiving the full force of bees before they are again taken from her, and so on through the season. This, therefore, is my explanation of the cause of there not being more brood in these hives. As soon as I noticed the effect produced upon the functions of these queens by the shifting of the working force of bees from one hive to the other I commenced to experiment by reversing less often with some colonies and more often with others. I found that, to allow the force of bees to remain in one hive 12 days, it improved the condition of things in the sections, and the queen deposited eggs in the brood-combs at a satisfactory rate. But the colony that was

shut off from the working force became so reduced in number of bees that their condition became alarming. They became so *much* reduced that nothing remained with the queen but a few very young bees—not nearly enough to care for the little brood they had. I found, by giving them the working force, there was no gain to the apiarist, as the storing of honey in the sections—which I had also changed—was stopped; and after three or four days I found that the eggs in the hive from which I had shut off the bees were all destroyed; hence by this transaction there was a loss in both honey and eggs. In the hives where I exchanged the working force every three days I found something of an improvement in the egg business, as the colony that was cut off from receiving any field-bees did not become so much reduced in numbers as to cause the wholesale destruction of eggs before the working force was again turned on to the relief of this colony. I am sorry now that I did not try one pair of hives by reversing the bees from one to the other every morning. I would now, but the season is so nearly over that I will defer the trial until another season.”

“Manum, I am very much obliged to you for your explanation of these experiments, and hope that you will be more successful with your experiments another year. I had great hopes that Langdon’s discovery would prove a success; and now as the hour has arrived when I must go to the train I will bid you and Mr. Daggett good-by.”

“I’ve like the tone of your first paragraph; that is, we like to see that caution or that conservatism, if you please, that is not inclined to jump at conclusions, and yet, on the other hand, is liberal enough to prove all things and choose that which is good. Mr. Langdon has made some improvements as well as discoveries that we hope will enable his device to do what was first expected of it.—Ed.]

HOW BEES USE OLD BROOD-CAPPINGS IN SEALING OVER HONEY.

“SANDWICHING” SECTIONS BETWEEN BROOD-NESTS, OR BETWEEN BROOD-COMBS NOT SATISFACTORY; A PRACTICAL POINT.

By Geo. F. Robbins.

When I read Mr. Manum’s “sandwich plan” for prevention of swarming in connection with the production of comb honey, in the first column of page 137, Feb. 15, I shook my head with a motion that meant “I don’t think that will do.” When I read further on, that the bees were not sealing the honey as white as they should, I said, “Just as I thought.” No, Mr. Manum, your “sandwich plan,” as you followed it, won’t work. I confess I am a little surprised that a man of your age, experience, and

generally keen observation, should not have guessed that. It may prevent swarming all right. But when a case of sections is sandwiched in between two brood-cases the honey will never be sealed white, for the reason that the bees will work more or less of the brood-cappings, as they are gnawed and dropped from the combs above, into the honey-cappings.

Bees, you know, are pretty good housekeepers in their way. They are both neat and economical. Cappings or gnawings of any kind, as they fall on the floor, are dirt; and if the weather is suitable, and they are strong and healthy, they will allow none of it to lie there. But while cleaning it out, taking counsel of their economy, I suppose, they use a great deal of it over and over again as they find it convenient. If you have ever had occasion to insert an empty frame in the center of the brood-nest you must certainly have noticed that they will work some, at least, of those refuse gnawings all through the new comb. If honey is coming in pretty freely they will not use so much, for obvious reasons. They will use the same stuff more or less, especially in sealing the honey over, when a frame of sections is placed next to the brood.

Some years ago I tried inserting a wide frame of sections in the side of a ten-frame brood-nest, and the lower tier of sections would be capped almost a solid brown. I have also practiced raising a few frames of brood into the upper story, and putting a frame of sections on either side; but the bees would utilize so much of these old chewed-over cappings in sealing the honey over that I quit that. Without ever trying it, I am sure that, to put combs of brood over a case of sections, would be even worse, for the gnawings would, of course, fall through on to the sections, and, of course, the bees would work them into the comb very largely. Of course, the bees never contemplate storing honey for you or me, and they never eat the comb themselves. Hence, to weave the old rags or paper, so to speak, into their new fabric, is but natural; certainly no worse than to make the meat scraps left on the plates into hash, as some thrifty hotel-keepers do.

Dr. Tinker, to prevent after-swarming, set a storifying hive, from which a swarm has issued, above the super on the hive, into which he puts the swarm; but he uses what he calls a brood-board between the super and the upper story. It is, I believe, simply a solid board, bound, I suppose, with cleats, with a single slat entrance at one side, which would, I should think, pretty nearly prevent this misuse of old brood-cappings. If I should ever try this sandwiching scheme I should certainly consider such a device an essential part of the plan.

THE USE OF HONEY-BOARDS IN OBTAINING NICE COMB HONEY.

I might say, in this connection, that I learned another thing some few years ago. I used to

be greatly annoyed by queens going into the supers and spoiling my nice honey. That was when I set my supers next to the brood-nest. To obviate this trouble I procured a number of wood-zinc honey-boards and put them into use, as also a few sheets of perforated zinc, bound with cleats, and a few slatted honey-boards. I soon began to notice that the honey stored above these partitions averaged whiter than that built in supers that were set down next to the brood-frames. Repeated experiments at length convinced me that wood-zinc honey-boards were worth as much for that purpose, and to keep pollen out of surplus honey, as they were as mere queen-excluders.

Mechanicsburg, Ill., Mar. 4.

[Friend Robbins' points are well taken. From our own experience in putting sections between brood-chambers, or between brood-combs, we know that the capping of such sections when completed, take on largely, the color of the brood-combs next to them. This is one of the reasons why sections should be stored above the brood-nest, rather than under or between the two parts of the same, because the small bits of dark wax will drop away from the super. Apart from this, bees seem more inclined to store the surplus above. With respect to the honey boards there may be something in what friend R. speaks of. Who has observed the same regarding them, and does it appear that there is a difference in favor of the slatted wood zinc, over the sheet metal bound with a wooden frame.—Ed.]

JAKE SMITH'S LETTER.

THE SIZE OF HIVES DISCUSSED.

Mr. A. I. Gleanings—*dear Sir*:—You know I told you about Mr. Dinant, what a good bee-keeper he was. Well, he come to dinner one day, and we had a good time. After dinner who should come in but Jim Short? Jim he laffs at our makin so much fuss with bees, and says he gits all the honey he wants in the old-fashin-ed way, and with only half the trouble. Before he come we'd got to talkin about how big it was best to have a hive. Jim said he did-dent go much on the size of a hive. Says he, "In the fall I heft the hives and take up the lightest and the heaviest."

"What do you take up the lightest for?" says Mr. Dinant.

"Well," says Jim, "if they're light they're not apt to winter over, so I may as well take em up. I don't git much honey, to be sure, but I git some, and I git some beeswax; and if I left em till spring the bees would be all dead and they wouldn't be neither bees nor honey."

"But why don't you keep the heaviest over winter?" says I.

"Because I've got a sure snap of a heavy hive, and I haint goin to take no resk. If I take it up in the fall I'll git a good haul, and what more do I want? I tried that thing a few times, and either they died in the winter, or if I waited a year later they wan't so heavy."

"I think Jim isn't so far out of the way," says Mr. Dinant. "A hive that's so very heavy in honey may not be very strong in bees, particularly if they've crowded in so much honey the queen couldn't lay. And for some reason it seems to be understood that, when a hive is so strong in bees, it may not winter better than a middlin one. At any rate," says he, "it can't be disputed that Jim does better than the average with box hives. But that isn't what we were a talkin about. The size of hives is what we were at, and Jim has them pirty big. I spose that's all right for his mannidgment, but with modern improvements a smaller hive is best for comb honey. Nearly all agree on the 8-frame hive. But for extracted honey the 10-frame is best."

Zed spoke up, and, says he, "What's the reason it takes a bigger hive for extracted?"

"Because," says Mr. Dinant, "it's all the same to the bees upstairs and downstairs. But for comb honey it's different. The bees rather store in brood-combs; and if they have more than 8 frames then they begin to store in the 2 extra combs, and when they once git started there they don't like to go above."

"I was a readin what big hives the Dadants use," says Zed.

"Yes," says Mr. Dinant, "and they're good authority. But they work for extracted honey."

"Yes, I know," says Zed; "they put on a super of shallow frames, and sometimes the frames are filled with foundation. Now the bees fill up these frames with comb honey; and when the harvest is over they're extracted. The 10 big frames is best because it's to be ex-



tracted; but if it was to be took for comb honey then 8 frames would be best. Now, what I want to know is how the bees know beforehand that it's to be extracted."

Mr. Dinant laughed, and, says he, "Why, Zed, you're quite a filosofer. It does look as if you've made a point there; but then the shallow frames are not just the same as sections, for they're not cut up into 4 inches square, and they have no separators. Perhaps, too, the frames of foundation are mixed with drawn-out combs. At any rate, nearly all agree that 8 frames is best. And nearly all the large honey-producers of comb honey use 8 frames—a thing they wouldn't be likely to do if it didn't pay better than 10 frames."

Zed didn't say any more, but after they was gone he seemed to be a study in over it. He seems to think the bees ought to work in sections about the same as in them shallow frames of foundation.

JAKE SMITH.

ADULTERATION OF HONEY.

ITS OPEN AND UNDISGUISED PRACTICE IN CALIFORNIA.

By Prof. A. J. Cook.

This subject received much attention at the Los Angeles meeting of the California State Association. One of the members had just come from San Francisco, where he had been engaged in arranging the honey from Southern California exhibition at the Mid-winter Fair. While at the California metropolis his attention was called to the matter of honey adulteration in the city. Upon investigation he found that the report was more than warranted. He had no trouble in discovering, not only the fact of adulteration, but those who were engaged in the business. Although the product was sold as honey—pure honey—yet these dealers in a palpable fraud did not hesitate to acknowledge their business, and told freely that they used glucose extensively in producing their "pure honey." They did not adulterate—at least, so they said—for the eastern markets, but only for this coast trade. It would not pay to bring glucose to California, to send back to the East, which seems a reasonable statement.

It will be remembered, that the samples analyzed by Prof. Wiley, and found adulterated with glucose, were labeled as produced in California. I remember one was labeled "Pure California Sweet-clover Honey." The eastern producer—or, better, mixer—was not informed, or he would have put white sage in place of white clover, as white clover is not a honey-plant of any importance west of the Rocky Mountains. This probably explains the "Muth samples." They were not only frauds, but the fraud went so far as to steal Mr. Muth's good name and reputation. Indeed, I think Mr. Muth says that some of the labels bearing his name were such as he had never used. We can readily believe that a man dishonest enough to sell a fraudulent article, would not hesitate to

profit still further by affixing the name of some well-known and reliable dealer. This gentleman brought some samples of glucose from San Francisco, and, at my suggestion, our good friend Brodbeck took this home and carefully melted it and mixed it with honey, one-fourth, one-third, and one-half, if I remember correctly, just as I did one year ago with glucose procured from a wholesale confectioner of Lansing, Mich. Mr. B. brought these samples, together with the pure honey, to the convention the next day, as I did a year ago, and with a like result. I believe I was able to detect the samples in order of adulteration, although I tasted of one right after another, which, of course, is not a fair way, as, after one has sampled a mixture, the taste so remains in his mouth that he is less certain. It is not at all difficult, even then, to detect adulteration, as it is easy to separate the genuine honey from the mixture. Others, at both conventions, were no less able than myself to detect the spurious. This glucose mixture is not only easily detected, but, worse, it leaves a taste in the mouth which is far from pleasant. It reminds me of the unpleasant effect of taking brass into the mouth. I am sure that such an article would soon go begging on our table, even though we supposed that it was pure honey.

There are, then, two serious counts against this honey adulteration. First, it fills our markets with a cheap, fraudulent article, and so greatly injures the market for the genuine. Secondly, it is palpably inferior, and would soon make the consumption of honey, good or mixed, much less. I stated this at the convention, and all who tasted of the several mixtures were in agreement with me, so far as I heard expressions. Few will continue to buy honey if this fraud is imposed upon them.

The members of the California association, and I believe they are wise, differ entirely from Mr. Heddon. We believe it possible to stop this nefarious work. We believe it an injury, not only to bee-keepers, but to all who eat honey. We therefore believe it not only right and politic, but our duty, to agitate the matter till this arch-enemy of the bee-keeper is dead and buried beyond all hope of resurrection.

It was resolved to urge, with all the vehemence possible, that laws, both state and national, be enacted, making it a serious offense, punishable by both fine and imprisonment, to manufacture and sell adulterated honey, except under its own name. This means death to the business, as there would be no sale for the stuff under its rightful name. We shall secure these laws, and, thus armed, with the excellent Union to back—or, rather, to lead us—we shall be able to conquer this worst foe to American apiculture.

The California Association appointed a wide-awake committee on legislation, whose duty it shall be to urge upon Congress and upon our

State Legislature the importance of such enactments; and this duty will be performed, I can assure you. Already the committee are formulating a plan, and no time will be lost in preparing for a winning battle.

I would urge every State in the country, where the production of honey is at all important, to join us in this fight. Congress moves with great—often provokingly great—deliberation in such matters. The "Paddock Pure-food Bill" was an excellent one, and almost became a law. Let us all join hands in urging that it or another bill like it be speedily introduced into Congress, and pressed to passage. Each State should see that its Congressmen are flooded with petitions. Let us give them no peace till this action is secured.

Claremont, Cal.

THE GLUCOSE QUESTION AT THE ILLINOIS CONVENTION.

By Hon. J. M. Hambaugh.

Ed. Gleanings:—I think I can speak in behalf of the Illinois bee-keepers, as regards your stopping that "hue and cry" against adulteration spoken of on page 105. I consider Mr. Heddon an enemy to the cause by his course through this whole adulteration controversy, and we want to see that "hue and cry" hurled at him until he will be ashamed to acknowledge he is father to such outrageous wrongs against the pursuit. At our last meeting of the Illinois State Bee-keepers' Association, the following motion was adopted relative to the petition following it:

"That each member be requested to send a copy of the petition to their various representatives in Congress, with the solicitation of their assistance in having it enacted into law."

TO THE HONORABLE THE SENATE AND HOUSE OF REPRESENTATIVES OF THE UNITED STATES:

The Illinois State Bee-keepers' Association, in meeting assembled, by unanimous vote, petition your honorable bodies to make and enforce laws forbidding the sale of any article under the name of "honey" unless it be the natural product of flowers and plants, naturally gathered by the bees from the plants themselves, and marked with the name and address of the bee-keeper.

Your petitioners further beg leave to state, that the "Conger Pure-food Bill," as presented at the last session of Congress, is in accord with the wishes of the association.

Now, Bro. Root, we believe this will meet an approval with every bee-keeper in the land; and if so, why not urge each and every one to solicit personally, and by correspondence, their various representatives in the halls of Congress, to the end that something may be accomplished in that direction? If we are in earnest in our appeals against that *hydra-headed monster adulteration*, let us send up an appeal to the throne that will cause our law-makers to respect our interests, and do something to relieve us from the gross wrongs and impositions heaped upon us.

[See editorials.—ED.]

SHADE FOR BEES.

THE EFFECT OF SHADE ON THE TEMPER OF BEES IN CALIFORNIA.

By Wm. Muth-Rasmussen.

Rambler has recently, on more than one occasion, spoken about the viciousness of California bees. I beg to differ with him. I have kept and handled bees in this State for 24 years, under varying circumstances, and I know that bees are vicious only as the owner makes them so. In Los Angeles Co. I kept my bees shaded with sycamore branches, laid on poles supported by posts set in the ground. The shed was high enough for a person to walk underneath. It not only gave shade, but free circulation of the air. When first put on, the shade was very dense; but in a few days the leaves wilted and admitted more daylight. Every fall the branches were taken down and burned up. At one of my apiaries, where Baldridge, Wilkin, Corey, and many others visited me, I had only one vicious colony out of 150, and I changed the disposition of that by changing the queen. Visitors often expressed their surprise at seeing me working with the bees without any protection over my head, and with my shirtsleeves rolled up to the elbows. I attributed the gentleness of my bees mainly to the good shade, which kept them comfortable, and partly to their proximity to the house, so that they became accustomed to seeing people and animals, without fear of being molested by them.

When I settled in my present location I planted 150 grape-cuttings, intending, in course of time, to have a hive standing at the north side of each vine. The first year I kept the ground nice and clean, and the hives were exposed to the hot sun all summer. This made the bees so ugly that I could not go outdoors, during the heat of the day, without having a number of bees trying to sting me. The next year I allowed the weeds to grow up all around the hives, trampling them down only at the back of each hive, where I had to stand when at work. The consequence was, that the bees at the entrances of the hives could not see what was going on outside, and I had comparative peace. I found, however, that the grapevines were not going to amount to anything for shade (where the sun, as here, shines on all four sides of a house or hive during the day) unless trained overhead, and that would take too long a time, and be quite expensive. I then planted locust-trees in the apiary, and since these have grown up I have had no trouble with vicious bees. The ground under the trees is kept clean, as the hives are standing on low blocks, and I keep my queens clipped. But where the ground is covered with vegetation, and at the same time shaded, it tends to make the bees still more gentle, because no heat rises or is reflected from the ground. My neighbor, Mr. Baxter, has his bees in an apple and peach orchard, and the ground

is covered with alfalfa, which at times grows very rank under the hives that are standing on benches 2 to 3 feet high. Time and again have I seen his horses standing in front of the hives, and eating the alfalfa underneath, without the bees appearing to notice them. I cautioned the owner about the danger to his horses, but he said there was no danger, and I never heard that any of them got stung.

Bee-keepers are often either too poor or too indolent to provide a proper shade for their bees. When Rambler gets through rambling, and settles down on a place of his own, where he can have his apiary in a nice grove of shade or fruit trees, he will change his views about the viciousness of California bees.

THE PORTER BEE-ESCAPES.

I wish to indorse all that has been said in favor of the Porter bee-escapes. I have used two dozens of them during the last two seasons. They are a wonderful help in saving time and labor, and in preventing robbing. I would not do without them, even if they cost five dollars apiece.

TO FASTEN FOUNDATION IN BROOD-FRAMES.

Let me say to Mr. Greiner, that I have for years used strips of soft pine, $\frac{1}{8} \times \frac{1}{4}$ in., and a little shorter than the inside length of the frame. I cut them out with my circular saw, and call them foundation splints. I always use full sheets, both in brood-frames and sections. The top-bar of my brood-frame is flat. I have a board on which is nailed another that will loosely fit the inside of the frame and support the foundation in the center of this. Having warmed the foundation so that the edge will bend without breaking, I place a frame upside down on the bottom-board; lay a sheet of foundation on the upper board, and slide it toward me, so that it will about cover the top-bar of the frame. Now place one of the foundation splints on the foundation, and about even with the edge; drive five $\frac{1}{2}$ -inch wire nails equidistant through the splint and foundation into the top-bar. Then turn the frame down, so that it lies on the bottom-board; press the bend of the foundation against the edge of the upper board (which should be moistened to prevent sticking), to make it square; raise the whole thing up perpendicularly, and lift off the frame with its sheet of foundation. It makes a sure job. Everybody for whom I make foundation wants a set of splints to fasten it with, and nails too, for that matter. To prevent splitting I dip a handful of splints, at the time, in a bucket of water, and shake the water well off.

I have tried the melted-wax method, but it was not always satisfactory. I have never used wiring, but am going to try it this year, to prevent the kinking of the lower corners of the foundation while the bees are working on it. If the wires could be pulled out when the comb is completed, and without injuring it, it would

suit me all the better. I shall test this the coming summer. The wires will sometimes interfere with cutting out queen-cells, and as I do not move my bees around I have no need of wires to support the combs.

Independence, Cal., Feb. 14.

[We have sometimes thought that bees stung worse on hot days, but very possibly this might be due to a lack of sufficient shade on those days. But after all, it hardly seems to us that shade alone would make all the difference between cross and gentle bees. At the time of our bicycle tour through York State we were not very favorably impressed with the gentleness of some of the bees of the leading apiarists; and we remember that on some occasions we received some severe stings in apiaries that were in groves. Some buckwheat honey was coming in, so the bees ought not to have been cross because they had nothing to do but to sting and pry into other folks' affairs. At our home yard, a cut of which appears on p. 923, '91, a portion of the apiary is shaded with grapevines, and another portion stands in the corner of the evergreen yard, so that, during the forenoon and part of the afternoon, they have no shade whatever; and yet we do not discover that the bees are any crosses in one place than in another.]

It seems to us that your plan of fastening foundation to top-bars is crude in comparison with that given on page 375 of "Langstroth on the Honey-bee," revised by Dadant. The Hambaugh roller will stick foundation, full sheets, to the under side of top-bars that are perfectly flat, so securely that the foundation will tear before it will cleave from the wood. From the experience we have had, we believe it will do it in about half the time, and that without sticks or nails. In calling attention, however, to this method, we do not mean to say that your plan is not a good one.—Ed.]

NOTES FROM THE "VATERLAND."

BEEES AS MESSENGERS.

By Karl R. Mathey.

A new use for bees has just come to the front; namely, as carriers of dispatches, especially in war. This use of bees has been previously confined mostly to sporting circles, but is now extended in its application through the efforts of a Frenchman, Mr. A. Teynac. He fastens to the back of the bee, by means of a little adhesive varnish, a minute piece of paper upon which is written the shortest and most condensed dispatch. This paper is fastened on in such a way as not to hinder the flight of the bee; and for additional safety a number of bees are sent out, similarly fitted up with the same dispatch. He now lets loose the bees, having removed, a few days previously, their hives to a distance of some 3 or $3\frac{1}{2}$ miles, and in which

they have been meanwhile confined. The bees then fly back if the region is well known to them, to their old home, where, in the mean time, a little framework of wire netting has been put up. Through this framework the unincumbered bees can easily pass. But those bearing a dispatch can not get through the interstices of the netting, as the paper adhering to their back is a little wider than the mesh of the wire. One can then look for the bees from time to time, and pick out the newly arrived dispatch-carriers. As a bee can not be so easily caught as, for example, a carrier-pigeon, and as they can be found in most localities, and require no special training, as do doves and falcons, for this work, and as it is of the utmost importance in war to convey secret messages with the greatest speed, it can not be doubted that this idea will receive serious attention if the bees do not prove to be too feeble for the work.

KARL R. MATHEY.

Medina, O., Feb. 16.

FROM OLD ITALY.

By F. M. Malan.

Just as we Old-Continent bee-keepers feel much interested in reading apicultural matter from over the Atlantic, so I am sure, do the readers of GLEANINGS when they get such news from the *queens'-land*—old, classical, and ever-splendid Italy. Well, I suppose some of my co-admirers of this very neat, well-informed, and trustworthy periodical have seen mentioned somewhere, during their apicultural career, a northwest corner of Northern Italy, an extensive and often narrow valley, adorned here and there with thick pine woods. A fine, wide Napoleonic road runs through its full length, so that we may say that Fénestrelles (celebrated for trees) and Briançon, on the French side of the Alps, form the two opposite poles of this famous valley, once altogether Protestant, but, at the close of the 17th century, violently Romanized by the missionaries of Louis XIV. But, of course, bees do not care for that.

Now, when a tourist wants to taste a first-rate honey, he asks at breakfast for *pragelato* honey (*frozen meadow*), nearly, I think, as if I asked for Narbonne or Gatinais honey in France. Its name is undoubtedly derived from the fact that the flat part of the valley consists mainly of fine meadows and rye-fields irrigated by a silvery Alpine torrent. I don't know what part of the United States would correspond to that celebrated and really excellent region. The altitude of this singular Italian valley, where people still speak good French, is rather considerable, being above the chestnut-tree region; and winter, consequently, is, as a rule, very sharp and long. It is nearly impossible to winter hives safely there. At some distance from the stern Fénestrelles, that fortress where

Saintine has placed the hero of his romance, Picciola, we have an outpost apiary of about 50 hives, at 40 kilometers (25 miles) from home, so that it is no small job to get them so high, the fine road we spoke of being insensibly but unceasingly up-hill.

Luserna San Giovanni, Circondario-Pinerlo, Italy, Jan. 30.

[We owe our friend a vote of thanks for his interesting letter, and hope he will come again and stay longer. A letter from that land of music, painting, sculpture, and letters, can not fail to be read with interest.—Ed.]

POLLENIZATION BY BEES.

By Prof. A. J. Cook.

Mr. Editor:—It is better to use the word "pollenization" or "fructification." The word fertile will apply to either sex, without regard to the other, and so the word has a certain ambiguity. I am glad of this discussion. It will make us repeat our experiments, use all possible caution, and so determine the real truth, if we do not know it now.

I wish to make a few statements, without extended comments, as I realize that you have been very generous of space in this matter already.

1. Many experiments have been made by such men as Darwin, Müller, Beal, etc.—men who have spent their lives in such work, and are very close observers, and all the results have looked in one direction: so if we find our experiments looking the other way, or our observations seeming to indicate the opposite conclusions, we should be slow to announce results till we have examined our methods and considered our observations most carefully, lest we have committed some error.

2. That the pollen from a bee is not potent seems impossible. If Mr. Fultz can establish that point, he will earn a place among the great discoverers. It would be almost revolutionary in our scientific theories regarding this whole question.

3. In many experiments tried at the Michigan Agricultural College, both plants were covered and bees introduced under the cover of one; and the results were many seeds where the bees were introduced, and almost none, or far less, in the other, or covered plants.

4. I do not wish to say that causes other than the absence of bees may not effect fruitage. I feel sure that bees are an important factor—so important that I mean to try experiments this season, that shall settle the question, if it is possible to do so.

5. That there was fruit before bees were imported into America is not satisfactory. There are wild bees; and before the forests were cleared, the climate was doubtless more mild,

so that the wild bees may have been more numerous in early spring. Again, the fruit-trees were as few as the bees—not gathered in great orchards. Thus there may have been pollinizers enough for the amount of fruit to be fructified. Again, who knows whether the amount of fruit was very great in this early time? In California, owing to the mild climate, there would be more—possibly enough—wild bees to pollinize the comparatively few fruit-blossoms on the wild plum, etc., which sweetened the spring air before the white man's advent. The case of the islands of Lake Erie seems conclusive; but is there not possibly some error of fact? Is it not possible that bees on other islands not far distant may have put in an appearance? Possibly the *Andrena* and other wild bees were in sufficient force to perform the labor. This would very likely be true in case the island was very small, and the trees limited in numbers.

Let us this season try to experiment so that the blossoms shall be under precisely the same conditions, except for the presence of the bees. Let us put aside all bias and preconceived opinions, and endeavor to settle the question. If it shall be shown, by a most cautious line of experiments, that bees are unnecessary to full fruitage, and of no importance in horticulture, it will not be the first time that theories in science have had to be recast. So we should all act in our experiments as if the question were unsolved.

In conclusion, let me say that geology shows that flowering plants and the bee orders came into existence at the same time, during the Cretaceous period, and not that the flowering plants were the earliest to arrive.

Claremont, Cal.

[We are glad to give Prof. Cook space for this reply, for, owing to the distance, he has not before had an opportunity to reply to the criticisms that were aimed at his article. We prefer to drop the discussion until fall, and complete experiments can be made again, taking into consideration the criticisms from the opposition. We feel confident of the result, and that that result will vindicate the claim of the bee more than ever.—Ed.]

A LECTURE TO THE SISTERS AND—RAMBLER.

By Rob Roy.

I have been wondering for some time what keeps the sisters so mute. Do they ponder too much on "golden silence," or have they taken too seriously to heart Rambler's depreciation of the sex? Such fine specimens as he shows in Dec. 15th GLEANINGS might explain his attitude if they were a fair specimen of pacific womankind, which, of course, they are not. It would take a brave man to dare give his broom

to such samples. But I do not imagine Rambler is altogether sincere in his attitude—it is only the bitterness of his loneliness which tinges his writings with blue, and casts shadows on womankind; but however this may be, the rest of us bee-keepers are not so one-sided; or if we are, it is the *other* sided with us. To be sure, the junior editor seems to hedge you in a little; but I am sure it is not that he begrudges you an open space in GLEANINGS proper. It is probably only that he knows how quiet ladies usually are, and fancies you will better enjoy a corner chat when you can talk wax flowers and dresses as well as aprons, without masculine interference.

For my part I should be sorry you should think we appreciated your help only when the bees hang out, and "somebody must watch," or, worse yet, when they have been too lavish with propolis and "somebody must scrape," or even when strawberries or peaches are ripe, and somebody must make the shortcake, or skillet pie, deep and rich. No, indeed; we are not altogether selfish, and we should like to have you show that you enjoy our success as well as to contribute to it.

I have used the plural *we*, as I do not fancy myself the only bee-keeper eager to lift my hat to the ladies; and now having expressed our sentiments I shall not feel it lost labor, even if Editor E. R. refuses me admittance into your *Conversazione*.

[Why, bless you, dear sister—or, or—brother—we did not mean to hedge in the sisters. We like modesty in the women-folks, but dislike that modesty that forbids "speaking out in meeting."—Ed.]



PREVENTING SPRING DWINDLING.

Question.—Could not spring dwindling be prevented to quite an extent by placing wire cloth over the entrance to the hives to keep the bees from flying when the weather is not fit?

Answer.—So far as my experience goes, it is *never* best to confine the bees to the hive by placing wire cloth over the entrance, except when they are to be moved some distance or shipped when a sale is made; and in these cases wire cloth placed only at the entrance often ruins the colony if it is a strong one, where there is necessity for keeping it there more than half an hour or so. The matter seems to be like this: When the few bees that act as sentinels go to the entrance from any cause, and find that their exit is cut off, they at once communicate this fact to the rest of the colony, when more bees come to go out; and

when they are not able to do so they begin to bite the wire cloth, and make a fuss generally, till the whole colony is aroused, and a commotion caused to such an extent that the meshes of the wire cloth are clogged up with bees so that no air can get through; and when this happens the bees become hot, or heated like fermenting vegetation; the honey in their honey-sacs is disgorged till the bees look like "drowned rats," and they perish with a heat sufficient often to melt the combs. If ever I have felt sorry for bees it is where they have perished in this way. There can be no assurance that this may not happen at any time, unless the weather is cold enough to cause the bees to cluster compactly; and were bees to be shut in hives when so clustered, the apiarist would need to be on hand, when the weather moderated, to take off the wire cloth, or a loss would occur. I doubt whether there can be any means used, in unpropitious weather in the spring, by which bees can be kept from flying out of the hive, that will not cost more than the benefit derived will amount to. Where bees are in chaff hives they are not so easily enticed out every sunshiny day, when the air is too cold for them to fly safely. If a wide board is placed sloping in front of the entrance, so as to exclude the rays of the sun from the entrance and lower part of the hive, bees will not venture out unless the air is warm enough for them to fly safely; but as these boards have to be removed every time the weather is suitable for the bees to go out, I doubt about enough bees being saved to pay for the trouble. I have practiced this to quite an extent in years which are past, but of late I do not, because I do not think it pays. Then, spring dwindling is not the result of the loss of the few bees that chance to go out for forage when the weather is unpropitious (although the numbers are quite materially reduced in this way when a cloud suddenly obscures the sun and a cold wind rises at the same time), but from the result of poor wintering, where the vitality of the old bees is worn out, so that they go out of the hive to die, and not for forage. A real case of spring dwindling can not be remedied by keeping the bees in the hive, for they would die in the hive just the same as though they were allowed their liberty. At least, this is the conclusion I have arrived at after a careful watch along these lines for nearly a score of years.

SEPARATE MAIL-SACKS FOR QUEENS TO AUSTRALIA.

Question.—Can we secure a proper condition, or surroundings, while queens are *en route* from America to Australia? I. e., can we know where the mail-bags containing queens are carried on the steamers? Are the bees boiled or frozen? We may have proper food in the cages, proper ventilation, the right number of bees with a queen, etc.; but if we can not control the mail-bag containing them, so but that

they are left in the boiling rays of a tropical sun for days at a time, we can never arrive at perfect success in shipping queens to and from America.

Answer.—The above comes from no other than W. S. Pender, of New South Wales, Australia, the same man who was largely instrumental in securing the lawful mailing of queens to and from Australia, as samples of merchandise, and at a rate of postage cheaper on an average than that obtained for queens in our domestic mails. When I first read the above I thought that there could be no help in this matter; but the more I think of it, the brighter it looks. If the exporting of queens could become a business of sufficient value to warrant it, it seems to me there would be no trouble to arrange with the postal authorities at San Francisco, Cal., so that, upon the leaving of the mails for Australia, all cages containing queen-bees could be placed in a mail-sack made of porous cloth, and the mail clerk on the steamer see that this sack is kept in a cool airy place on the ship during warm weather, and, in cool weather, transferred to a place sufficiently warm for the comfort and welfare of its occupants. I do not know that this is just the place to discuss this matter; but as we are all beginners in this matter of shipping queens to foreign countries I thought it might not be inappropriate. Who will be the one to communicate with the proper postal authorities at San Francisco regarding these matters? Will you do it, friend Root? or can it best be done through the Bee-keepers' Union? It seems to me that, if we are ever to make a success of shipping queens in the mails to Australia, this part of the matter will have to be looked after; for, with every other condition the same, so far as I could see, some steamers have landed 75 per cent of my shipments alive in Sydney, New South Wales, while other steamers have landed 100 per cent there dead. These things can not be accounted for in any other way than that suggested by friend Pender. Would it not be well to agitate this matter, Bro. Root?

MOVING BEES SHORT DISTANCES.

Question.—I have 12 colonies of bees packed side by side. How can I move a part of them a short distance, leaving the remainder where they are? The bees have flown freely.

Answer.—Should there come a few days of stormy weather, so as to keep the bees in their hives, then is your time to move them, for at this season of the year bees mark their location anew after every week or so of confinement. Should no such time come, then I would move the strongest of the colonies and let the weak ones be strengthened by the returning bees from those moved. If this is not advisable, then move them in the evening or on some rainy day when all are in their hives, then stand a board up in front of the entrance. This

board should be wide enough so as to darken the entrance to a considerable extent, and turn the bees to one side in going out. In this way the bees notice at once that something is wrong, and this causes them to mark their location anew; otherwise they would start off in a straight line as usual, and get lost. The old place should also be disguised in some way so it will not look as it did. Many bees will undoubtedly go back to the old place, but after careful watchings for many years I am satisfied that all these bees finally go back to the new stand.



MAJOR SHALLARD'S NARROW SPACING AND
NARROW TOP-BARS INDORSED.

Mr. A. I. Root:—It has long been my desire to write a letter for publication in *GLEANINGS*; and Major Shallard's article on page 101 gives me an excuse for so doing. I have been experimenting with frames of different widths for the past seven years, and I have come to the conclusion that $\frac{1}{4}$ inch is a correct bee-space; and if the brood-frames are spaced a full $\frac{1}{4}$ inch between top-bars, and the top-bars are just $\frac{1}{8}$ inch, the problem of burr and brace combs is practically solved. In the season of 1891 I transferred six colonies from old box hives, and the combs were very crooked, so I could not get the number of frames (8) in each hive. At different times in the season I placed frames containing sheets of foundation in each of the six colonies, and at the close of the season I had a nice lot of combs; that is, in those frames which contained foundation in them when placed in the hive. The frames which had foundation in them I placed at one side of the hive, and I had to space them closer than I wished, on account of the old crooked combs which I had transferred. I noticed, after I had placed 4 frames of foundation in one of the hives, that the top-bars seemed to be more clear of bits of comb than the others, so I left them spaced just as they were (a small fraction over $\frac{1}{4}$ inch), and at the close of the season this hive was almost entirely free from brace and burr combs.

The next season, 1892, I made a hive with top-bars $1\frac{1}{8}$ wide, and hived the first swarm of bees in it, thinking that the frames spaced just $\frac{1}{4}$ inch at the top, and $1\frac{1}{8}$ from center to center, would do away with burr and brace combs entirely; but after a time I noticed that the combs were not smooth and nice (and some burr-combs), like the frames which I had in general use, which were $\frac{3}{8}$ of an inch wide, so I placed 10 frames in a hive (my hive is just $11\frac{1}{4}$ in. inside, by $13\frac{1}{2}$ long) with sheets of foundation, and hived a late swarm on them, and I was very

much elated to find that there wasn't a sign of a brace or burr comb either, and the combs were perfectly straight. There were a few cells along the bottom edge of the top-bar that were pushed out a very little. I tried four colonies this last season, with the same results. I am not, however, satisfied with the results as yet, on account of so little honey being stored in the brood-chamber. If my hive were larger it might give different results, and I am inclined to the belief that different localities will give different results. I shall make one hive this season the same style as the Dovetailed, and see what the difference will be. The above were all hanging frames. J. H. GOE.

Mossy Rock, Wash., Feb. 9.

[This is quite interesting; but, say! Doolittle and a host of others would "kick" hard against adopting $1\frac{1}{8}$ -inch spacing. Will Bro. D. please stand up and explain for himself.—Ed.]

$\frac{1}{4}$ -INCH SPACE BETWEEN BARS $\frac{3}{8}$ INCH THICK,
PREFERRED.

As to $\frac{1}{4}$ -inch space between top-bars, I should agree with the article in *GLEANINGS* given by Major Shallard, having been in the bee business for 15 years, and having tried a good many kinds of frames, from a $\frac{3}{8}$ to a $1\frac{1}{8}$ in. top-bar. That is the frame I am now using. I have at this date 94 colonies in winter quarters, all on their summer stands, and I find that I get the best results, without burr-combs, to have my top-bar $1\frac{1}{8}$ in. wide, $\frac{3}{8}$ deep, and Hoffman self-spacing sides, using the same end-piece that you do, which leaves just $\frac{1}{4}$ -inch space between frames. Since I commenced using them I have not been troubled with burr-combs. I would not use any other spacing than $\frac{1}{4}$ inch. It is enough for me. I have now 50 colonies on those frames. It is just fun to take off honey. I furnish all my hives now with those frames, and find all those using them say that they want no other than $\frac{1}{4}$ inch between frames. Mr. Nelson Morton, of Maples, is burning up all of his old frames, and is putting in all the $1\frac{1}{8}$ -inch top-bar. He is an experienced bee-keeper, and has had bees for 25 or 30 years.

Eddyville, N. Y., Feb. 6.

C. H. AVARS.

[We believe our correspondent is about right. The larger part of the testimony seems to point this way. We have been making, for three years back, just such frames as friend A. speaks of; but $1\frac{1}{8}$ -inch spacing from center to center will give more than $\frac{1}{4}$ inch between top-bars $1\frac{1}{8}$ in. wide. For that reason we contemplate making them $1\frac{1}{8}$ in., providing our readers do not think this too wide.—Ed.]

MAKING THE HOFFMAN FRAME DEEPER.

Friend Root:—Don't you think that, if the Hoffman frame were 10 inches deep, it would give better results? From my experience, the frame as made by you is so shallow that it breaks the queen's circle, or, at least, the brood extends some four or five inches along the top-bar, while with a frame 10 inches deep, the

brood, as a general thing, comes just to the top-bar, or within one or two rows of cells of the top; and I find, after years of using such a frame, without any kind of queen-excluder, the queen has never, in a single instance, laid an egg in the super; and I can not see that the extra depth of the frame makes any difference in the time that bees will go to work in the sections.

I should like to know who that man is who writes for GLEANINGS and signs himself Jake Smith. I have an *idea* that his name would sound better written thus—C. P. Dadant. How is it? Jake is all right, any way; but we should like to know him better.

Mossy Rock, Wash., Feb. 9. J. H. GOE.

[Most of those who have advocated a change in depth have called for a shallower rather than a deeper frame. Regarding the identity of Jake Smith, you are wide of the mark.—Ed.]

HOFFMAN FRAMES INDORSED; 1½ IN. TOO CLOSE SPACING.

In the Feb. 1st number of GLEANINGS an article by Major Shallard, on correct spacing of brood-frames, appeared. I like his article very much except the 1½ inch spacing. I think it is a little too close. Such close spacing would be against bees clustering in a thick body, in wintering outside. I will give my experience of 14 years. When I began bee-keeping I used 1½ inches from center to center, with top-bar ¾ inch wide and ¾ inch deep, and a ¾-inch space on top of the frames. Now, those frames would be stuck together with brace-combs, and the honey-board would be fastened down with burr-combs.

Six years ago I changed my top bars from ¾ to 1½ inches wide, and ¾ inch thick, using 8 frames in 11½ inches. That is the inside width of my hive. Ever since I made the change I am never troubled with brace or burr combs. Mr. Shallard thinks that, with wide spacing, the bees will not raise brood near the top of the frames; but I beg leave to differ with him. When I used the wide spacing, the bees used to raise brood close to the top of the frames. Now, between the two extremes, 1½ and 1½ inches, 1½ inches wide from center to center is just right. It is not the depth of the top-bars, but the distance between them, that prevents brace-combs. There should not be more than ¼ inch between the tops of the frames, and about ¼ or ⅜ inch between tops of frames and surplus-cases.

Next season, if I am spared, I am going to use 1½ inch spacing from center to center, which I think is just right. I also intend using the Hoffman frame next season, which I think will be a great improvement over the hanging frame. I made some Hoffman frames and placed them in a hive, wedging them up. I then raised the hive on end and looked at the bottom. One could not but exclaim, "Oh what

beautiful spacing!" Then, taking out those frames, I replaced them with loose hanging frames. What irregular spacing! I think the Hoffman frame is going to be the sole frame of the future.

WM. COLEMAN.

Birr, Ont., Feb. 22.

[The spacing 1½ in. is close enough; as you say, it is a nice medium between the extremes. This spacing with top-bars 1½ in. wide will certainly secure all the advantages for the closer spacing and top-bars ¾ in. wide.—Ed.]



ENCOURAGING FOR AUSTRALIA.

We are having a plentiful flow of honey here this year, though, owing to the few bee-keepers in this district underselling one another, the price of extracted honey is 6 cents per lb.

E. R. H. MCCARTHY.

Fernleigh, Australia, Dec. 16, 1893.

A CORRECTION.

In GLEANINGS for Feb. 15, page 133, 20th line from the top of first column, read "Chickasaw" for "Chicka;" and in 8th line read "cauliflower" seed for "California" seed. It will improve the sense wonderfully.

J. E. CRANE.

Middlebury, Vt., Feb. 21.

[Bro. Crane will have to shoulder the blame of the first error, while we take the second.—Ed.]

WATER INSTEAD OF SMOKE.

When one has any work to do in a hive, at a high temperature, the plan of using water instead of smoke is greatly to be commended. With this the bees are to be gently sprayed. Quietly as lambs they retreat, without making the least attempt to sting. I can recommend this simple method to all bee-keepers, whether they are "smokers" or "non-smokers."

Medina, O., Feb. 16. KARL R. MATHEY.

[We have used water in place of smoke. While it is better than nothing, it is much inferior to smoke.—Ed.]

FAIR DEALING.

Friend Root:—We commission merchants have so many hard things said about us that it is very refreshing to receive occasionally a letter like the enclosed. Mr. Norton formerly lived at Lanesboro, Pa., but recently removed to Oakland, Cal.

CHAS. McCULLOCH.

Albany, N. Y.

Messrs. McCulloch & Co.:—The draft on New York was received last night, and I must thank you for the promptness and fairness in your dealings with me. But, to be candid, it was no more than I expected after the recommendation of your firm I got from Bro. A. I. Root. I have learned to place implicit confidence in what he says. I do not understand how that can of dark honey came to be in the lot.

P. L. NORTON.

Oakland, Cal.

SOFTENING FOUNDATION.

On page 22 you say, "Soften old foundation by putting it in warm water." I soften mine by letting it lie in the sun a little while, but not long enough to melt.

I think Zed Smith struck it about right (page 19) in regard to ripening and keeping honey. I had some stored in a room over the kitchen, where there was a fire nearly every day the year through, and it was in good condition after being stored 2½ years. SUPER LIFTER.

Columbus, Wis., Feb. 10.

NARROW SECTIONS; WHY THEY ARE USED.

Some of my neighboring bee-keepers are using sections holding about ¾ lb., and their honey was the best I have ever seen, being much ahead of that on exhibition at the fair. Does size of section make any difference in looks?

Camillus, N. Y., Feb. 5. M. WHEATON.

[No; but they fill quicker, and, in a poor season, you can get full sections of the narrow sort where perhaps you could not with the standard widths. The former have the preference in Canada, and are gaining favor on this side.—ED.]

ARTIFICIAL HONEY FROM BEET SUGAR.

At a bee-keepers' convention held in Görlitz, Prussian Silesia, attention was called to a new use of sugar. In the sugar-refinery of Lange-lütje Bros., in Kulm, on the Elbe, real honey was so closely imitated that even a chemical analysis could scarcely show the difference. Even the same crystallization is noticed in the artificial product as in the best natural honey. This artificial stuff will sell at about 18 cts. per 2½ lbs., and hence threatens to become a formidable competitor to genuine honey.

Medina, O., Feb. 16. KARL R. MATHEY.

[It seems that the same idea has broken loose in Germany that we have to contend with in this country. We sincerely hope and believe it will never "become a formidable rival" of real floral honey in either country. We have enough to fight against in glucose.—ED.]

SWARMING AND THE SUNDAY QUESTION.

On page 99 we see an article headed "Hiving Bees on Sunday." I will give my plan, but it may be different in other localities. I have never missed a service at church by watching for bees to swarm, and I do not think I have ever lost a swarm. The swarms that come out before time to go to church I hive, and leave the rest until I return. I have never known a swarm to come off without settling. As we are never absent more than three hours on Sunday, we are not likely to lose any thing. Sometimes two swarms go together, but nothing is lost by that. Brethren, by all means go to church.

Tipton Station, Tenn. A. C. SPENCE.

[Swarms will usually remain two or three hours before "lighting out," but not always. It is possible you lose a few swarms and do not know it. Again, in rare instances swarms will abscond without alighting beforehand on some tree or shrub.—ED.]



His delight is in the law of the Lord; and in his law doth he meditate day and night.—PSALM 1: 2.

THE *Progressive Bee-keeper* is packed full of information useful to bee-keepers. Every issue shows a progressive spirit.

We are obliged to leave out a good deal of matter from this issue, now standing in type. It will have to be held over till our next. By the way, Bro. Leahy, of the *Progressive Bee-keeper*, finds the same condition of things in his office. This must indicate prosperity.

We call particular attention to the articles by Prof. Cook and Hon. J. M. Hambaugh, in another column. Let every bee-keeper who has an eye to bread and butter that he may get out of the production of honest honey, petition his senators and representatives at once.

We are now working on the 62d thousand of our A B C of Bee Culture. We fear that the previous edition will be exhausted before we have the new one completed. The new edition, like every previous one, is receiving some large additions and revisions—so rapid, indeed, is the progress of our industry.

THE policy of the *American Bee Journal* and GLEANINGS, in strongly condemning Mr. Heddon's position on the question of glucose, is warmly indorsed by a number of writers in the first-mentioned journal. Our own collection, if we were to publish the whole list giving similar indorsements, would be a long one.

BRO. HUTCHINSON, editor of the *Bee-keepers' Review*, has written a very interesting article on "The Largest House-apiary in the World." It was written for the *American Agriculturist*, and is accompanied by half-tone engravings showing exterior and interior views. The building is owned by H. P. Langdon, of East Constable, N. Y., of non-swarming fame.

IN the *American Bee Journal* for March 1, under Queries and Replies the question is asked, of a score or more of bee-keepers who answer the questions in that department, what race of bees they prefer. Nineteen out of 26 vote for the Italians; 1, Italians crossed with German bees; 2, Italians crossed with Carniolans; 1, the Syrio-albino; and 2 the Carniolans. It is remarkable how the Italians seem to hold the preference among prominent bee-keepers. There was a time when the Holy-Lands, the Syrians, and Cyprians, were preferred by a large number of bee-keepers. These, with the exception of a cross of the Syrians, are utterly ignor-

ed; and the next in point of preference are the Carniolans.

THE *Canadian Bee Journal* is steadily improving. It has just put on a new and tasty cover. The paper and presswork are of the best, and the editorial management shows the handiwork of a practical bee-keeper. We gave this journal a good send-off in our previous issue, but it really seems to deserve another. The new series of the *C. B. J.* differs in one important respect from the old one. The former started on a high plane of journalism and gradually went *downward*; but the latter started on a high plane too, and so far has been gradually working *upward*.

OUR friend Mr. Mathey, our German correspondent, is not only a writer for the journals, but an artist—one who can reproduce the various scenes in his travels. An article in another column gives a very fair idea of Russian bee-keeping. By the way, it may be interesting to our readers to know that Mr. Mathey was for two years translator for the consular representative of Austria at Philadelphia. He was chosen to that position after having passed the highest marks out of some 50 different ones who applied for the coveted place. It was his work to translate the Polish, Russian, Slavic, and Hungarian into German.

So it appears from the railroad statistics that California produces over 5 million pounds of honey a year. In another column Rambler expresses an opinion that this amount is increased to 10 million by the addition of glucose. There was a time when it was policy to keep still, because there was so little glucose mixing done that it did more harm than good to mention it; but now the "hush-up policy" would be suicidal to our industry. It would let the glucose fiend ruin prices on honey, and finally disgust consumers with any thing bearing the name of honey, so that it would be impossible to dispose of even the pure unadulterated article at even half decent prices.

In our wax-room we have observed that the alternate heating and cooling of yellow wax causes it to become slightly darkened. We have known this to be the case, but did not suppose that it had so much effect until very recently. Our attention being called to the matter, we asked the foreman of our foundation department to place a small quantity of extra select yellow wax, with a little water, in a large wooden pail. This he was to heat every day, and let cool, for a week. With a dipping-board he was to take a sheet of wax at the first heating, and another after the six days of successive heatings and coolings. We have before us the result. One is a beautiful sheet of yellow wax—as nice as any thing any one ever saw, and the other is darkened to a light pea green. It looks decidedly muddy.

THAT ADULTERATED (?) UTAH HONEY. AGAIN.

ON page 154 we made the statement that pure honey might contain a small percentage of natural cane sugar. At the time, we were not able to put our finger on the authority. Since that time we have received the following card, which will explain itself:

For authority for which you inquire on page 154, I think you will find it on page 746, Dept. of Ag. Rep. for 1892, as per Bulletin No. 13. The amount of cane sugar to pure honey is there given as from 8 to 10 per cent.

HAM. SMITH.

Ionia, Mich., Feb. 20.

Upon referring to Bulletin 13, page 746, we find that Mr. Smith is correct, and what we said on page 154 was substantially right. The following, from S. T. Fish & Co., will explain itself:

Mr. Root:—In the last issue of GLEANINGS, page 154, you give space to the fact that Mr. Jankovsky, of Cleveland, Ohio was arrested, and that Professor Smith, a chemist, claimed his honey adulterated. Mr. Jankovsky writes us that he put up the honey in the same condition as received from us, and we wrote him that, if he did so we guaranteed it pure. In order to do ourselves justice, we wrote the producers and got their affidavit that they did not feed sugar to the bees. With sugar selling at from two to four cents per pound higher than honey, it does not seem possible that this commodity would be fed to the bee, when but three-fourths of the sugar that is fed would be stored in the combs and the other fourth be consumed in the secretion of wax and for the brood.

In order to find an authority who would pass a different opinion from Professor Smith's, we sent a sample to the United States Department of Agriculture, and received the following answer:

Messrs. S. T. Fish & Co.:—The sample of honey forwarded by you February 14th was duly received, and was entered on the books of the Division of Chemistry as Serial No. 12965. The sample was marked "Lot 5362." On examination it proved to be free from commercial starch sugar (glucose), or added cane sugar. As these are practically the only substances used to adulterate honey, the sample is probably pure. Respectfully,

G. L. SPENCER,

Acting Chief of the Division of Chemistry.

We continue to guarantee this honey strictly pure and unadulterated, and we will await with much interest the outcome of our Cleveland customer, as it appears to us he has a suit for damages.

Respectfully, S. T. Fish & Co.

"THE WORLD IS OUR PARISH."

If there is any one thing in which we take pardonable pride it is the fact that our journal does not bear the least trace of *localism*. So far as any particular locality is concerned it tries to represent and give due prominence to the bee-keeping interests, not only of every important place in the Union, but of every important honey country in the world. Latterly the big German bee-keepers have been receiving due prominence through our correspondents, Mr. Karl R. Mathey and Mr. C. J. H. Gravenhorst, the former of whom is just now telling us about bee culture in Russia, through

which country he has traveled. California is well represented now by Prof. Cook and our old friend the irrepressible Rambler; Texas by the Atchleys; Australia by several good writers; China and Burmah by several of our missionaries; Syria by Ph. J. Baldensperger, now stationed in France; Mr. Malan in Northern Italy; Illinois by Dr. Miller; York State by G. M. Doolittle—in fact, we shall have to stop, for if we go on we shall have to mention several other States in the Union as well as several more foreign countries. "The world is our parish," as Wesley said.

CHEMICAL ANALYSES OF HEDDON'S HONEY.

For several years back reports have been coming to us, to the effect that James Heddon, of Dowagiac, Mich., was selling honey adulterated with glucose. Believing him to be a good straight man, and one of the veterans among honey-producers, we assured each one who wrote us that there must be some mistake, for we said it was not possible that Mr. Heddon could think of doing any thing so unwise and foolish. At the Ohio State Convention in Cleveland, however, held on the 19th and 20th days of February, 1890, a sample tumbler of honey was shown us, after one of the sessions, said honey having been purchased of one of Mr. Heddon's customers. I had a talk with the man who brought the honey, and I told him that, from my acquaintance with such mixtures, I was satisfied in my own mind that the sample contained a large per cent of glucose. The matter was talked of more or less between all the sessions by quite a number of the bee-keepers; and although we discussed it in a quiet way, a reporter for a large daily got hold of it and had it written up in flaming style. As soon as Ernest got wind of it, he buttonholed the reporter and desired him to keep the whole out of print because he (Ernest) thought there must be some mistake, and there the matter dropped. Complaints still kept coming, however, and finally, by my direction, Ernest asked a well-known bee-keeper to purchase two cans of honey from Mr. Heddon, and forward them on to us. This bee-keeper did so, and also sent an affidavit to the effect that the same honey was reshipped to us without taking from the depot, and this *we have in our possession*. The honey was received with Mr. Heddon's tag attached to the cans, and it seemed to be (judging from the taste), adulterated largely with glucose, and a poor quality at that. A sample was submitted to Prof. H. W. Wiley, chief chemist at Washington, D. C., through Prof. Cook, and here is his report:

Prof. A. J. Cook, Agricultural College, Mich.

Dear Sir:—The sample of honey sent by you on the 20th inst., numbered 100, has been entered as Serial No. 11653; on analysis it gave the following numbers:

Direct polarization at 23°.....56.3
 " " after inversion.....48.7
 Sucrose (calculated from above readings).....5.8%

Reducing sugar, calculated as dextrose.....58.11%
 " " invertose.....59.95%
 Water.....21.30%
 Ash......28%

The sample is undoubtedly adulterated with at least 50% of glucose, although, as you know, it is not possible to determine the exact amount on account of the difference in rotation of the various glucoses.

Trusting that this analysis will be satisfactory, I am, Respectfully,

H. W. WILEY, Chemist.

(11653—E. E. E.—J. S. C.)

Washington, D. C., Apr. 1, 1893.

A sample was also submitted to Prof. Cook, and was by him also pronounced adulterated with glucose.

You may ask why we did not write to Mr. Heddon in regard to this thing. We did so, but received any thing but a satisfactory answer.

I believe we practice and preach that kind of charity that "is kind, and suffereth long;" and that is the reason why we did not publish the analysis before: but the affidavit below, of a more recent case, it seems to me, *demands* that the bee-keepers of our land be notified of these things.

The State of Ohio, Cuyahoga Co., ss.

Personally appeared before me, John C. Hemmeter, a Notary Public for and within said County, Geo. G. Willard, who being by me first duly sworn upon his said oath says:

That he is conducting a general merchandise business at No. 270 Pearl Street, in the city of Cleveland, County and State aforesaid.

That on or about the 15th day of November last, affiant received a shipment of honey from James Heddon, doing business at Dowagiac, in the State of Michigan; that said honey so shipped and received by the affiant hereof was represented to be a pure and unadulterated article; in accordance with said statement of representation of its purity, did authorize the selling of the same to the trade by his agents. That on or about the 7th day of December, following, one of the affiant's agents was arrested by the State authorities, for offering and selling an adulterated and impure honey, and subpoenaed to appear for trial before a legal tribunal, having jurisdiction in the premises; affiant, in conjunction with said agent, appeared in said Court on the day set for trial, heard the hearing of said agent, and all the witnesses in connection with the case, including that of the State's Chemist.

That the Judge, after summing up the evidence, rendered a verdict as charged, and fining said agent twenty-five dollars and the costs of prosecution (aggregating the sum of \$64.85), which amount the affiant hereof paid.

Whereupon affiant procured another sample out of same shipment, and delivered same to Professor Hobbs (being the Professor of Chemistry at the Cleveland Medical College) for further analysis, who, upon performance of the same, coincided with the State Chemist, in pronouncing it "adulterated and impure." Further, affiant saith not.

GEORGE G. WILLARD.

Sworn to before me, and by the said George G. Willard, subscribed in my presence this ninth day of February, A. D. 1894.

JOHN C. HEMMETER,

Notary Public.

The so-called "cheap honey" Mr. Heddon has been advertising for a number of years, together with his recent utterances on the glucose question, and which we have criticised, seem to give coloring to the statements of the four different chemists.

We have statements from other parties, not depending upon analysis, but think best to withhold them for the present. In conclusion, we would say that we have given the facts for just what they were worth, and the reader may draw his own conclusions.

A. I. R.



Count it all joy when ye fall into manifold temptations.—JAMES 1:2.

If I remember correctly I have used the above text before. In fact, it has been a marked and singular text to me ever since I first found it. We are so often exhorted to beware of the tempter, and to pray that we may not be led into temptation, that it sounds a little strange hear the old veteran servant of Christ tell us to *count it all joy*. In the new version the word "divers" is changed to "manifold." "Count it all joy, my brethren, when ye fall into manifold temptations." And the margin suggests that the word "temptations" might be translated "trials." "Count it all joy when ye fall into many trials." If you ask for an explanation, the very next verse suggests: "Knowing this, that the trying of your faith worketh patience;" and the new version puts it, "Knowing that the proof of your faith worketh patience." The idea seems to be, that we grow strong and able and useful by being tried. My thoughts were turned to this subject recently by some experience of my own. Sometimes I have thought I would stop telling my experience; but when I stop telling my trials that have brought me to study my Bible more, and to know my Savior more, then I stop getting letters of encouragement. By the way, these letters and words of encouragement are more helpful to me than you may imagine. While at the recent Chicago convention, during a recess quite a number gathered around me, and some were inquiring if that was A. I. Root. One old gentleman made me recall who he was by referring to the correspondence of past years we had had together. Just as he was obliged to go away, because so many others were around, he put his head close to me and whispered, "Brother Root, I am a *better man* for having known you and for reading your writings in these past years." The remark was loud enough, however, so that somebody overheard it. I do not know but I took the liberty of repeating it to the other friends, as it helped us to get acquainted some. Well, I was quite a little surprised when one after another extended his hand, saying, "Brother Root, I too can say that very same thing." And others rejoined, "And I!" "And I!" And then we had a big laugh all around.

A few days ago one of the "big guns" in the work of the Farmers' Institute—one who has labored in Ohio and many other States—came to see me, and we were over in the little greenhouse just before train time. As he put out his hand in going away he said something like this: "Brother Root, we read Talmage's sermons almost every week, and they do us good, and we thank God for such a man as Talmage. But I want to tell you, before parting, just for your encouragement, you know, that we think at our house that your sermons sometimes come a little nearer home than even those of the great preacher Talmage."

Well, I have watched closely, and I have read these kind words of encouragement from men and women from afar off, and I have tried to let them guide me, that my work may be still more helpful to you all; and, if I catch the spirit aright, I am forced to believe that it is God's will that I should tell you of these conflicts that I have.

Just now our nation is pretty full of sin and crime. There are jealousies and hatred ram-

pant in the land. There is disagreement and bitterness. There is a wonderful lack of the spirit of Christ Jesus. What shall we do? Where is the remedy? When we feel ourselves being drawn into the meshes of Satan's net, where is the remedy? Do we recognize in the very outset when we are getting thus entrapped? Do we *know* when we are getting out of the track—that straight and narrow track? Yes, I think we do; and the best remedy for sin and crime is to foil and disappoint the prince of darkness at the very outset. And now for my little experience of late.

At this season of the year a good deal of involves upon me. A good deal of authority seems to be vested in me; and while, as a general rule, I succeed in keeping out of sight the fact that I am "boss," if I choose to be, yet notwithstanding I am strongly tempted many times to use that authority. You know my teachings have been, at least ever since I have become a Christian—to rule by gentleness and love—at least, where it is possible so to do. You know how often I have quoted, "Love ye your enemies, and do good to those that hate you." Why, I have repeated this text so much that I ought to be ashamed of giving way to any feeling of spite or even vexation. Oh dear! if some of these friends who have said such kind things by word of mouth or by letter only knew of the feelings that oftentimes sway me to and fro, I am afraid they would lose confidence and faith—in me, at least. And yet—why, as sure as you live, the text we are talking about says, "Count it all joy when ye are strongly moved," or when you feel inclined to do wrong. Of course, we are not to count it all joy when we *give way* to wrong impulses.

Well, something displeased me. I did not think much about it at the time, but some way it got to running in my mind. I put it away; but Satan whispered that, where people were bent or determined to rush into trouble it was not particularly my affair. In my feeble health Satan said (since I have not been able to take any long rides on my wheel I confess I have been getting a little under the weather)—well, in my feeble health, as I was saying, Satan suggested that people must take care of themselves, and that it was certainly not my business to be looking after *everybody*. The temptation held out was, mind you, not to throw so much as even a straw in a certain person's way, but simply to let him have his *own* way. Sometimes it is hard for people to learn that there are sins of *omission* as well as sins of *commission*; but surely one who has talked these things over as much as I have ought not to need any light or instruction in that line; and I confess the idea was quite fascinating—to just attend to my own affairs—and there are many of them (enough to take every minute of my time just to attend to my own affairs)—and to do every thing as well as I knew how, and to let *other* people attend to their own affairs. A trifling matter, was it not? But I knew the spirit was not a right one. It was far from being a loving spirit—that is, from the spirit that enjoins us to love even our enemies. But the thing kept coming back and taking my attention. A better spirit suggested, as of course it would, that community, and especially my good friends, would look a little surprised and astonished. They might say, "Why, Mr. Root, did you not know this was going on?" Well, the evil one replied to this by saying I need not know—why should I? I could not be expected to know about *every* thing. But there would be at least a little prevarication here. I profess to be a Christian. I profess to value my peace with God more than all things else. But there can not be any peace with God when you

are making excuses, or when you are, even in your own mind, trying to persuade yourself that something *is* so when you know it is *not* so. A young Christian enjoys going to meeting, prayer-meeting, and Sunday-school, when he first gets into the church. In due time, however, old thoughts and feelings come back. He says to himself, "I do not want to go to meeting to-day. There is not anybody who goes to hear *every* sermon that is preached. Why shouldn't I stay at home as well as others? Besides, I do not feel real well this morning, any way."

Do you know, my friend, that this is dangerous ground for a Christian to stand on? Suppose you answer before God, "Are you staying at home because you do not feel well physically, or are you staying at home because you do not feel well spiritually? Where is the real truth? or why do you want to stay at home—because you do not feel well? or is it rather because you do not feel like going to meeting? Is it the physical or the spiritual part that is just a little ill?" If it were the *spiritual* part, you need *above all things* to go to church, and have that spiritual part cured. If you do really value your peace with God, you will certainly lose it if you listen to your inclinations, and let laziness come before duty. Sometimes we have a headache; and with the little headache we have a good deal of laziness—spiritual laziness—that is, a disposition to hang back, and to give way to feelings that are not praiseworthy feelings at best. As you value your peace with God, dear friend, be honest with *him* at all hazards. "God is not mocked." I have been all over this again and again. I have tried going to meeting, and I have tried staying at home; and I have taken a sort of invoice of my spiritual condition Sunday night as I went to bed, and I never yet felt blessed in staying away from places of worship; and I certainly never felt blessed in making excuses in my own mind that are not well founded.

Well, I had prayed again and again that God would help me to put the whole matter out of my mind; but for some reason or other God did not see fit to grant my request. I was not particularly surprised at that, because God does not always answer our prayers by giving us exactly *what* we ask for. There seemed to be a sort of fascination about dwelling on the matter—an unprofitable dwelling; in fact, it was quite the reverse of being profitable. I would sometimes get up vehemently—mentally, of course—and say, "Get thee behind me, Satan;" and Satan would travel off with a rush. But when I sat down at work again, before I knew it was looking over my shoulder, and whispering in my ear. I presume many of you have had similar experiences. Have you not said to yourself, "Better take the whole matter; I wish I could never *think* of it again?" But it had got too well started; it made me think of a puppy that is bound to follow you when you want him to stay at home. You chase him clear back to the house, and then keep watch; but just about as you begin to be satisfied he is not coming any more, there he is, close to your coat-tails again.

A week passed. The temptation was gaining ground. Instead of chasing it away as I had been doing, I began to look at it curiously. It began to exhibit new phases, and I knew it was sin or the evil one that I was dallying with. There was a sort of fascination about it in this way. I have talked with many criminals in our jail, as you know. Sometimes I read accounts of terrible tragedies, in papers. What is it that gets into men's hearts, and moves them to such folly? Why, it is the very same chap I have been scraping acquaintance with

for a few days back. Something suggests that, may be, if I knew more about him I could more successfully fight him and warn people against him. Our entomologists, when they want to destroy an injurious insect or fungus, first get most fully acquainted with the enemy. Here is a chance for me to study all about the cloven hoof.

Now, there is truth and error mixed up together right here. It is true, as our text tells us, that it is a good thing to be tempted and tried—yes, severely tried; but it is a tremendous error to think we are called upon to step out of the right way to *find* temptation.

My test in all these years back has been something like this: How does this thing affect your spirituality—your love to God and to your fellow-man? I was obliged to say, promptly and decidedly, "I am losing my ground spiritually." Finally this matter was taking so much of my thoughts that sometimes I did not realize what I was doing. I remember of going down to the greenhouse to open the ventilators wider; but instead of having my mind on my work it was so much on this other thing that I closed them up, endangering my plants. I looked around to see if anybody was watching. My friends might have noticed that I was at times abstracted, but perhaps they did not.

Are we really forgiving a person when we say we want nothing more to do with him? That old familiar Lord's prayer that we have so often on our lips says, "Forgive us our debts as we forgive our debtors." When we ask God to forgive us for a wrong that we have confessed, we expect him to feel toward us as if it had never happened. And right here came an experience that troubled me. I could not forgive nor overlook the wrong; that is, it did not seem to *stay* overlooked nor forgiven. Well, one day, quick as a flash, it burst in upon me that I was committing exactly the same offense that I was severely censuring in another. Some of you may have read that wonderful little book, "The Manliness of Christ." Everything about Christ is manly, straightforward, and noble. Even his enemies acknowledged that much. But every thing about Satan is cowardly, mean, and ignoble. Here we see an illustration of it. The thing that I could not tolerate in another, when I was the transgressor *myself* assumed a far different phase. When I first became conscious of it the telltale blood rushed to my face; and as I was in the presence of busy workers all around me I felt like hiding my face to conceal my guilt and shame. You see, these experiences give me new glimpses of Bible teachings. "Why beholdest thou the mote that is in thy brother's eye, and considerest not the beam that is in thine own eye?" Yea, verily, why is it? It is because, as the Bible tells us, "The heart is deceitful above all things, and desperately wicked. Who can know it?" If I ever had any temptation to think I was getting to be any thing like a saint, the experience of the week fairly took it out of me; and I could say with more sincerity, perhaps, than I ever said before, "Lord, have mercy upon me a sinner."

It was Sunday morning. I knew I should have a tussle. If Satan ever works hard it is when he succeeds in going with you to the house of God. He will keep your mind from the sermon, if it be a possible thing. He will persuade you to stay at home if he can. If he can not do that, he will go to church with you. When you get inside he will persuade you to sit down near the door, or as far from the minister as he can. Oh! I know him, you see. He and I have been in sight of each other, at least, for nearly twenty years. Before I was a Christian I used to sit away back; but now I want

to be close to the minister. The adversary does not like being drawn right up under the pulpit. You get up close to the minister, and you will stand a "right smart chance" of getting away from Satan—at least, for the time being. I sat, as I always do, close to the pulpit, sitting on next the front seat. When the church is full I very often sit on the very front seat; in fact, I rather like it. I like the idea of a full church, so that even the front seats are well filled. Well, on this particular Sunday morning I was close up to the minister. It was an anniversary service. There were three ministers in the pulpit, and there was a good deal of spirituality in the house and in the community. One of our old pastors—in fact, a companion of my boyhood, who has become a great evangelist and Sunday-school worker—commenced reading the 10th chapter of I. Corinthians; and I knew, as soon as he started, that help was coming for me right in this chapter. If every minister of the gospel, as he reads and speaks, could know of the mighty work he may be doing in some heart all unconsciously, what an inspiration it would be to him! I remember the 11th verse:

"Now, all these things happened to them for examples, and they are written for our admonition."

During the days I have been telling you about, I had been wondering if it were possible that other people—the world at large, as well as we Christian people—were having such fierce tussles with evil and sin as I am continually having. Two or three times—yes, once quite recently—the thought had forced itself into my mind, "Why, Mr. Root, you are no Christian at all, and in fact, *never* was." A good many times I only laugh when Satan puts in such a speech as that; but once or twice of late I have begun to fear that it were possible I might in *time* become a castaway. Since God in his gracious kindness gave me at my conversion a glimpse of heavenly things I have never doubted—no, not for one instant—and I never shall doubt that divine revelation, no matter what may happen. If I am lost, I shall be lost with a full and complete faith in a heaven and a hereafter, and a loving Savior; and of late I am beginning to have also a pretty complete faith in a personal Satan, and in a realm for the lost—lost by their *own free choice*. Well, now, I want you to listen to that 13th verse, and I pray that God may help you to hear it and understand it as I did. Here it is:

"There hath no temptation overtaken you but such as is common to men."

That means that we are *all* children of Adam. We all have evil impulses. Sometimes the friends in jail and some other friends as well, suggest that criminals are "*built*" differently from Christians. They say to me, "Oh, yes! but *you* are not *built* the way I am. You do not know any thing about these things." My friends, I am built just exactly like the criminals that fill our jails and penitentiaries; and but for the grace of God I should not be one whit better. Now let us see about the rest of the verse:

"But God is faithful, who will not suffer you to be tempted above that ye are able; but will with the temptation also make a way of escape that ye may be able to bear it."

There was comfort in the last words of this verse. If Satan had got up in front of the pulpit that day, he sneaked back, out of sight; and my opinion is, that he concluded that Congregational church filled with people, especially while those four devoted servants of God were there occupying the pulpit, was the most unpromising place for his work, to be found in this country.

A saloon-keeper in jail told me a few days ago that he believed Medina Co. was the worst place for a saloon-keeper that there was in the whole face of "God's earth;" and I shouldn't wonder if his boss partner in the business thought just as he did. Within the next few minutes, or perhaps during the next hour, I should say, there was an unfolding before my spiritual and mental vision such as I never had before of the power of the gospel of Christ Jesus to mend, correct, and purify our land, and redeem it or emancipate it from evil. There was such a glimpse pervaded *my whole being*, as I had never felt before. I felt like shaking myself and saying in the language of my old favorite text, but which for a few days I had almost forgotten, "O ye of little faith! wherefore didst thou doubt?"

Just one word more: A good many people have been greatly troubled because the New Testament has so much to say about people being possessed with devils. Nobody objects, that I know of, to the idea that people are sometimes "possessed;" for I heard a mother tell her children that they *acted* as if they were "possessed." But the idea that, even now, during this present 19th century, the idea that people are possessed with *devils* seems to be too much for a certain class of people to believe. Come to think of it, however, haven't you seen people again and again who were so much in the possession of some evil impulse that they could not attend to their legitimate tasks? Haven't you seen people act as if they did not know what they were about, because they could not forget some grievance, fancied or real? Did you ever see two farmers get into a quarrel about a line fence? Sometimes the whole neighborhood takes sides in the question. They neglect their crops, and waste their time over a few feet of land that does not amount to any thing, either to them or anybody else. They go into a lawsuit, waste their money, and then have a fight, oftentimes, that ends in murder. Are they not really possessed with something? and is not it the "something" of the kind that stays away from church, or does not get very close to the pulpit? of the kind that objects to hearing the Bible read? Well, you may call it what you like. I think I should say they were possessed of an evil spirit; and the best medicine for that evil spirit, that the world has ever yet invented, is given in the New Testament. In fact, it is so potent that reading it over will often completely banish the fiend. Why, yes; sometimes a single verse, as in the case I have mentioned, banishes the demon and leaves the human soul clothed and in its right mind, sitting at the feet of Jesus, obedient, and ready to be taught.



GOOD SEEDS, ETC.; IF WE PAY FOR THE BEST SEED, DO WE GET IT?

Since this matter has come up in regard to onion seeds, I have been a good deal troubled. In many of the seed-catalogs you will notice different grades of seeds. For instance, we have Yellow Danvers onion, at \$1.00 per lb. Then we have Yellow Danvers, *Buxton stock*, at two or three times as much. I do not know any thing about the above stock; but the wholesale seedsmen seem to think the word "*Buxton*" is a sufficient recommendation to

warrant them in asking \$200 for 100 lbs. of seed, and this at wholesale. Again, I notice in one of the whole-sale catalogs, "Chicago Market nutmeg melon, *Colvin's seed*, \$2.75 per lb.;" and just below it we see ordinary seed (from Colvin's stock) only 38 cts. per lb. Just think of it!—five or six times the price wanted for genuine *Colvin* seed, while the cheap seed is raised from the Colvin stock. If this meets the eye of some of the large seedsmen, I wish they would explain, for the benefit of our readers, what makes this difference. Again, we see Osage melon, *true stock seed*, \$2.50 per lb. Ordinary seed, raised from stock seed, only 33 cts. per lb. And so this goes on all through.

There is one thing that is rather encouraging to me in these wholesale catalogs. Every little while we find certain seeds marked "Crop failed." We notice this after the Hoosier King watermelon. Well, why didn't they buy some Hoosier King of somebody whose crop did *not* fail? or is it something so new and rare that nobody else had it? Landreths, in their lists, frequently say of some pretty staple varieties, "Crop failed."

Some years ago, when I visited Rawson's grounds at Arlington, near Boston, some of you will remember that I saw some beautiful cucumbers on a bench. Of course, they were too large for the table; but the shape was superior—in fact, they were such models of what we want in the way of cucumbers—that I inquired about them. The foreman told me they were for "stock seed." When I told him I wanted just a few of the seeds he said Mr. Rawson did not permit them to give away or sell a single seed of this extra choice White Spine cucumber. Mr. Rawson was absent when I made my visit; but when he found I had written up his grounds he made me a present of some of the seeds from those choice cucumbers. We planted them on the creek bottom, and the season, I believe, was quite favorable. Well, we had an immense crop of the finest and nicest cucumbers that it was ever my good fortune to raise. We sold them all over our town, got a big price for them because they were so handsome, and sold more cucumbers than we had ever sold before or have sold since, and we got an *extra* price too. Why didn't I save some seed? Well, I was too stupid. I thought I could buy some of Mr. Rawson, just like it, and that he could save them cheaper than I could. The following season I did buy some of him, and paid him \$3.00 per lb. for them. You have, many of you, bought them of us, and tried them. I bought the seed for stock seed, and we all paid a big price for it accordingly. I think that was four or five years ago. Well, I have never had any cucumbers since like that lot I have mentioned. I tried them on the same ground, but we have had such exceedingly wet seasons that I attributed the failure (partly, at least) to that cause. Well, I have tried them in the greenhouse and on other grounds. I have tried them beside ordinary White Spine seed, and I really could not see *very much* difference. May be there was some difference after all. Perhaps I may be putting it too strongly.

At one of the national conventions of seedsmen, somebody told a laughable story about a woman who was a gardener. She was somewhat illiterate, but she knew the difference between extra seed and common seed. She asked the prices. They told her. Then she looked the dealer square in the face and propounded the following: "Look here. If I pay for the best seed do I get it?" The man who told the story did not say what reply he made. Now, will our experiment stations please help us in this matter by planting some White Spine cucumber seed, worth 30 cts. per lb., and some

that costs \$3.00 per lb., and tell us the difference? Will they please try Chicago Market nutmeg melon and Osage melon in the same way? Why, I would give this minute \$10.00 per lb. for some cucumber seed that would produce a crop like the one I have told you of. Mind you, I do not know that it *was* the seed that produced the crop. And, again, I do not know but it was. Will the experiment stations tell us what they think about it, or what they have already learned in that line? How much have the seeds to do with the outcome? Then there is another trouble. If it really transpires that a certain strain of seed is worth four times as much as that generally sold in the market, we shall be in the same fix as the poor woman—"If I pay you for the best seed, do I get it?" Some of you may say, "Why, look here, Bro. Root. You are a seed-dealer yourself. How would you answer the poor woman—"If I pay for the best, do I get the best?" That is just what troubles me. If you pay for the very best seed, I am not really *sure* that you will get what you expect and what I expect; and have actually meditated giving up selling seeds because I can not give it the brains and attention it ought to have. This I do insist upon: Every seedsman should have experimental grounds. He should have a test garden where the great wide world—his customers—could be invited in order to see tests and trials made of the seeds he sells; and I should really like to have the name of the man who grows the seed put conspicuously over the crop. Where is there a seedsman who dare do this? One spring we had a customer who said he wanted 10 lbs. of a certain strain of cabbage seed, providing the seller would tell him who grew that seed. I asked different seedsmen if they could fill the order under those conditions. I did not find *one* who was willing to tell who grew the seed. In fact, one of them felt a little hurt when I personally mentioned to him the matter. He said that was his own private affair as to who grew his seeds. There may have been some reason in his position, for the grower might be greatly annoyed by correspondence he did not want; and he might be annoyed by orders for seeds when he did not wish to have a retail business on his hands. Notwithstanding this, I believe the experiment grounds might have a card telling who grew the seeds that produced a certain crop; but he might also say the entire crop belonged to seedsmen. Terry plants his whole farm to Freeman potatoes; but he keeps saying all the time, "Don't write me for potatoes, for I haven't a potato to sell." J. M. Smith is obliged to do the same thing. Now, let these men who grow potatoes or seeds state clearly that they are *growers*, not retailers. I suppose very likely it is Terry's name that has given the Freeman potato a part of its great boom. Terry's name, in his strawberry-book, has also created a big demand for the tart Sterling strawberry; but yet Terry keeps saying he is not in the strawberry business. In fact, he throws away a wagonload of plants every fall in thinning out his beds, because he would rather throw them away than to be bothered with selling them.

Just now we are retailing great handsome heads of cabbage for 30, 40, yes, even 50 cts., a head. They are Holland cabbages. I believe they are larger and finer than any thing I ever grew. Hold on! Seven or eight years ago, when I spoke of these same beautiful cabbages imported from Holland, some friend in the old country sent me some seeds; and from those seeds I raised the finest cabbage we have ever had, before or since. I supposed then, by buying the cabbage seed to be found in our catalogs, I should get just as good as what was sent me. I

have never found it; and if some of our friends in Holland will send me some more seeds like those they sent me before, I will gladly give \$10.00 per lb. for them. May be the seed sent me was worth more than that. I do not know how much such Holland cabbage *might* be worth. In the first place, the seed was extra large. It produced the finest, healthiest, and strongest plants I ever saw. Now, hold on! I do remember that I planted the seeds after sifting guano and lime into the seed-bed. This helped to give them their vigor. But I did the same thing with the other cabbage seed. The Holland cabbages grew better than any thing I ever saw, before or since; and they kept right on growing, and they made heads almost but not quite equal to the imported Holland cabbages. I am sure the seed had something to do with it.

Perhaps in the above I have told more what I do not know than what I do know; but I am sure it is in a direction where our people need advice and instruction.

You know I once paid \$50 for half a pound of Grand Rapids lettuce seed. I paid it because I saw the crop right before my eyes. It is true, I did not see it by daylight, but I saw enough by lantern light to warrant me in taking the chances of investing my money. It was the best investment in the way of seeds I ever made in my life; and then and there I gave it the name it now bears, and sent samples of that half-pound of seed broadcast almost all over the world; and now the Grand Rapids lettuce seed is cataloged and recommended by almost every seedsman in the world. It has been worth thousands of dollars to the gardeners, especially the greenhouse gardeners, of the world. Please do not think that I am finding fault with our seedsmen. There is not a season that passes but that surprises me because they do as well as they do. I have bought seeds more or less of almost all who send out nice catalogs; and I am actually astonished to find every thing so good and true, especially with the vast multiplicity of kinds. The catalog I have been quoting from offers for sale 35 different kinds of muskmelons, and other goods in proportion. As this seedsman gives prices by the 100 lbs., on most of them, I am forced to believe there is a regular and steady demand for the greater part of them.

UNCLE JAKE TALKS TO US ABOUT THE DIFFERENT QUALITY OF ONIONS.

A. I. Gleanings—*dear Sir*:—I see you're great on onions. Did you ever eat em biled in milk? They haint so rank that way. We never thought top onions, potato onions, or multipliers, was as good as the old-fashioned sort. You ask about what's become of the old-fashioned, top onion-sets. Well, now, they haint so old-fashioned, and, what's more, they haint near so good, to my notion, as the sets raised from black seed—little injens we always called em. Isaac Tillinghast tells about raisin an acre of em, but the rest of you all seems to run to tops.

Now you git some of the reglar old-fashioned sort, plant em middlin early, then when they git about a foot high, with buttons about as big as your finger, some hot day when you're pirty hungry, jist pull some of them injens, and let your wife dress em and put em in a tumbler of cold water onto the table. They make a handsome ornament. And they taste jist lushus. It makes my mouth water to think of it. The way to eat em is to take some good bread and butter, dip the end of the onoin in the salt, and bite off what you want. They haint no cooked onoin can begin to come up to a raw one. Not when they're the right age, I mean. They

must be young and delicate. Some likes jist the white part, and eats tops and all.

If you can't git the little onoins to plant, you can raise some yourself, and then you can have them for next year. Plant the seed in drills offle thick. Then you see they can't help but grow little—haint got room to grow big. Some takes a barrel and rolls over the bed to break down the tops and stop them growin'; but if you put in the seed thick enuff that's enuff without the barrel.

JAKE SMITH.

[Very good, Uncle Jake. The point you make is an important one; and since you mention it, I believe I have heard people say that onions raised from black seed, or, if you choose, sets raised from black seed, give milder and pleasanter onions than those raised from old-fashioned top sets, and this improvement in quality is probably the main reason why onions raised from top sets are going out of use and out of the market. If, however, any one wishes to buy them at the prices quoted in the seed-catalogs, I should very much like the fun of the raising. I have just sent and got samples that are advertised at \$5.00 and \$6.00 a bushel, and they have not even pulled the top sets apart and prepared them in nice shape for planting, throwing out the dry shells, etc. Somebody asked one of our agricultural editors why people did not all of them plant sets instead of seed. The reply was, that sets were so expensive that they were never used except for getting extra early onions for bunching. The sets produce bunching onions a good deal earlier than where the seed are sown in the open air, but the expense is so great for the sets, and for planting them one at a time, that, unless we get great prices for the crop, it will not pay. Now, the new plan of raising onion plants in the greenhouse comes right in to compete successfully with the onion-set business. Let us bear in mind that we can not afford to buy onion-plants, nor onion-sets either, except to plant them very early indeed, to produce very early crops and get big prices. Now I wish others would let me know if it is true that the old-fashioned top sets produce onions of inferior quality. The Egyptian onions grow from top sets in this way, and most people have found out now that these onions are strong, and of poor quality. They are so very hardy, however, that people will buy them when no other kinds of green onions can be obtained. How about the quality of the new *white* top sets advertised in some of the seed catalogs?]

ONION-SETS—A QUERY.

I raised $2\frac{1}{2}$ bushels of onion-sets last year from $\frac{3}{4}$ lb. of seed. What has been your experience in raising sets? and when is the best time to pull them? Will they not be all right to pull when they are large enough for sets?

Steamburg, Pa.

MERRITT BALDWIN.

It would seem, from the inquiries made through the various agricultural papers in regard to raising onion-sets, that there is a great lack of information in regard to the subject. The question above, as I understand it, is this: If you sow your seed very thick, can you get onion-sets by pulling and curing the onions when they are of a proper size for sets? Well, this depends. If you have dry weather, or your ground is poor, or any thing gives the plants a setback so that they mature small bulbs instead of making onions, your plan will do all right. A neighbor of ours sowed an acre of Globe Danvers, and expected to get several hundred bushels of onions. In consequence of the dry weather, however, they stopped growing, and many of them began to ripen up, making bulbs so

small that the greater part of the crop was only sets instead of onions. By taking a great deal of pains in curing and sorting, he managed to get several bushels of very good sets, and quite a good many that were too large for sets; and, if I am correct, a good many more that did not make sets or onions either—in fact, they did not produce a ripened bulb at all—only some thick-necked half-grown onions that might have been used for bunching and nothing else. To get nice sets you want poor ground or dry weather. You may remember a correspondent in GLEANINGS said they always raised their sets near *large trees*. The roots of the trees carried off the moisture and fertility so that the onions were obliged to make little bulbs. On good rich ground, with plenty of water, when onions are of the proper size for sets, they make thick necks, for they have not yet commenced to make bulbs; and if they were pulled and cured at this stage, you see they would not be just what is wanted for sets in the market.

SOMETHING FURTHER IN REGARD TO ONION CULTURE, CLEAR FROM "MERRIE ENGLAND."

Mr. Root:—That time when you had a bed of onions, one end of which was nice and soft and rich, the other stiff and hard, the hard end did not please you at all, yet the onions did best there. I thought you knew how to grow onions; but from later articles in GLEANINGS I see you have not taken the hint. Try this plan: Manure the bed with good heavy cow or pig manure (horse manure is too light); keep the manure near the surface; tread all over the bed, and make it solid and firm. If your onion-plants have been raised in heat, see that they are properly hardened off. Plant with a trowel; with the point of the trowel scrape away the soil about an inch deep. Spread the roots; put back the soil; press firm; scrape some soil up around the plant in a little heap. When you cultivate among them this will come away and leave the onion standing on the surface. Top dress in your usual way. Deep loose planting will make good seed grow thick necks.

Greenlaw, Eng., Jan. 1. ROBERT DOUGLAS.

TURNIPS.

We have had some experience during the past few years in the matter of growing turnips as a market-garden crop, and therefore can not refrain from giving to the public something of the impressions and opinions formed thereby. We have found an excellent demand for really good sweet-flavored turnips, in neighboring towns and cities; and we now do not have much trouble in producing good crops. Formerly we practiced to some extent broadcast seeding, but have turned over an entirely new leaf in that respect. Under that plan the plants come up by the scores where we want but a single one; and the operation of thinning them properly is too long and tedious to be thoroughly performed; hence the natural result is, we have many weak and spindling plants with few good roots. On the other hand, by drilling the seed in rows two and a half to three feet apart, good culture may be given from the beginning, with horse-cultivator. Thinning to from 4 to 12 inches apart in the row (according to variety of turnip) is a comparatively simple and easy operation that can be largely effected by the dextrous use of a three cornered hoe.

It is advisable to sow seed of both the small round strap-leaf turnip and the rutabaga also. In this way we have something to suit the various tastes and caprices of different customers—some preferring one, some the other. Of course, the rutabaga varieties must be sown much earlier than the smaller kinds. For them

the middle of June or early in July is the time to put in the seed; whereas the strap-leaf turnip may be sown as a second crop any time during the first half of August. For this reason we think the smaller varieties are the more profitable, since they grow very rapidly, are little trouble, and occupy land that otherwise must needs lie vacant and run up to weeds to bother the cultivator next season with their many seeds.

Fresh manures are not good for turnips, as they favor scab and worms. Better use ashes or fertilizers, or have the manure applied several months before sowing turnips, that its rank character may become dissipated. Probably new sod land gives the smoothest, handsomest roots. The great beauty with turnips is that, what the market does not want, domestic animals of all classes do desire and thrive wonderfully upon. There is no root more generally useful for stock-feeding than the turnip.

Danvers, Mass., Jan. 15. M. S. PERKINS.

[I heartily agree with the above, although I did not think particularly about it until I remembered that a good many of our turnips have been coarse and sometimes hollow, through the effect of excessive stable manure used on our grounds. During the past season we sowed turnips on a clover sod after some early crops were taken off. No manure of any kind was used except the clover turned under. While the turnips did not grow as large as usual, they are nearly all right for table use; and they are sweeter and richer than we have had for a good many years. Terry, you know, thinks we get better-shaped and better-flavored strawberries on clover sod than where such excessive quantities of manure are used. Another thing, these turnips have stood severe freezing weather much better than those of such rank rapid growth.]

W. I. CHAMBERLAIN AND HIS VEGETABLE-GARDEN.

Does it pay to have a garden? The following from the *Ohio Farmer* is from the man who wrote our book on tile drainage that is having such a wonderful sale just now. It is written in his usual happy style, and comes in quite seasonably:

The great advantage, too, is that these things are so cheaply and so easily raised. Six extra early hot-house tomato-plants cost me 25 cents. Their fruit ripened early in July, while southern-grown tomatoes were still selling at the groceries at 25 cents per pound—a costly luxury. The six vines bore a great abundance for our little family, averaging three members. They lasted until the middle of November, brought in green and nearly full-grown at the first heavy frost, and ripened in the house. One of the six vines, "Atlantic Prize," set where the "chip yard" had been for years, was the largest vine I ever saw. I "let it run" at the foot and the molasses, and it finally grew over 13 feet long and over 6 ft. wide; covering quite densely an irregular oval space indicated by these dimensions. It must have borne two or three bushels, ripening all along for about three months. The bushels of tomatoes we ate cost us 25 cents for the extra early and extra thrifty vines, and almost nothing for their care and picking. It was a grand year for them. Hubbard squashes, planted along the tile ditch that conveys the kitchen-slops far from the house, cost us 10 cents for seed, a little care and road dust to clean out the striped bugs, and yielded far more than we can eat in the six or seven months that we can use them. If we choose we can save more than 500 times as much seed as we bought—pure Hubbards of finest quality. The celery cost \$1.00 for 200 strong, thrifty plants, and probably as much more for work—growing, digging, and packing, roots and all, standing in sand in "Root's bushel boxes" in the cellar. Thus we have it crisp and fresh, right at hand all the fall and winter. The beets are packed in sand too, the smoothest and tenderest being selected. The parsnips are dug as we want them, and first boiled and then halved lengthwise and fried brown.

in plenty of butter. The cabbages are turned heads down on clean drained turf, and covered with corn-stalks and a little earth. The lima beans were picked just before the first heavy frost, and lasted several weeks; kept green in pods, in a cool place. John Gould, of Aurora, raises enough for a small hotel; pulls them, pole and all, before killing frosts, and sets poles and vines on end compactly, in a basement, and has delicious green lima beans half of the winter. He has no patent on it. I mean to copy his plan next year, for the lima bean is the most delicious of the bean varieties.

The amount of food and relish we have got out of our little garden this year and previous ones is simply amazing, considering the cost. The Stowell's Evergreen sweet corn was a feast for weeks. The nutmeg melons at breakfast-time are one of the luxuries at the \$4-per-day hotels. We had them for weeks at a money cost of 15 cents for seed, for we planted plenty and had more than we could eat. Another year we mean to do better and start all the berries, rhubarb, and asparagus. Who will join us in this means of promoting health and comfort, and of diminishing doctors' bills?

THE

"ASPINWALL."

1. The most perfect Hive ever offered to the public.
2. It has Closed-end Frames, which can be more rapidly handled than any other frame, without killing a single bee.
3. The Top-bars project over the Hive ends, enabling easy and rapid handling of the Frames. This feature favors narrow spaces between the bars, and makes the most perfect non-burr-comb frame extant.
4. They can be manipulated without working with fingers among the bees, or having them daubed with propolis.
5. The hive may be contracted or expanded, as desired.
6. The frames are provided with an improved and rapid method of putting in comb foundation.
7. The frames are L. size. We also make a deep-frame hive L. length.

Send for illustrated circular.

Aspinwall Manufacturing Co., Jackson, Mich.



50c. TRIAL SETS

Of Choice Seeds and Plants.

- Our object in offering thus cheap is to introduce our goods and secure your future orders. Please tell your neighbors about it.
- Set U—2 Beautiful Palms, 2 sorts, strong plants..... 50c
 - " B—16 packets choice Vegetable Seeds, all different..... 50c
 - " E—20 packets choice Flower Seeds, all different..... 50c
 - " F—10 Lovely Carnation Pinks, 10 sorts..... 50c
 - " G—10 Prize Winning Chrysanthemums, 10 sorts..... 50c
 - " H—4 Superb French Cannas, 4 sorts..... 50c
 - " J—10 Elegant Everblooming Roses, 10 kinds..... 50c
 - " K—8 Grand Large Flowered Geraniums, 8 sorts..... 50c
 - " M—24 Fine Gladioli, large Flowering Bulbs..... 50c
 - " P—6 Hardy Ornamental Flowering Shrubs, 6 sorts..... 50c
 - " R—6 Choice Grape Vines, 6 sorts..... 50c
 - One-half each of any two of these sets..... 50c

Any 3 Sets for \$1.25, or 5 Sets for \$2.00,

Delivered at Your Postoffice Prepaid. Satisfaction Guaranteed.

Order these sets by the letters. Send now from this advertisement, as these Introductory sets do not appear in catalogue which contains 168 pages and will be sent free with first order. If none of these sets suit you, and you want anything in our line do not fail to send for it, free, as we want you to see our prices before ordering elsewhere. It is one of the best issued; contains hundreds of illustrations and full descriptions of one of the largest and most complete stocks in America, including many new, rare and valuable novelties. We grow 750,000 Roses yearly; many other things as largely. Are headquarters for the choicest

Trees, Shrubs, Vines, Roses, Bulbs, Plants, Seeds, etc.

40th YEAR. 1,000 ACRES. 23 GREENHOUSES. LAST CALL, ORDER NOW.

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Made by an

IMPROVED PROCESS ON NEW AND
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of my own invention,
which enables me to
produce

The Cheapest.

Prices on 5 lbs. or more will range from 35 to 50c per lb. Send for prices and samples.

W. J. FINCH, JR.,

931 E. Monroe St., Springfield, Illinois.

In responding to this advertisement mention GLEANINGS.

Control Your Swarms, Queen, &c.

Send 25 cents for samples of West's Pat. Spiral wire Queen-Cell Protectors, and and Pat. Spiral Queen Hatching and Introducing Cage, also best Bee-Escape, with circular explaining. 12 Cell-Protectors, 60 cts., or 100 for \$3.; 12 Cages, 60 cts., or 100 for \$5, by mail. Address

N. D. West, Middleburgh, Scho. Co., N. Y.

Sold also by all the leading supply dealers.



THE BEST

is what I mean to give my patrons. Drones from selected queens. Breeders are carefully selected from the best. Personal attention and assiduous care given to rearing queens that they may be of the highest type.

Untested, \$1.00; after May, 75c; March and April, 6 for \$4.75; dozen for \$8.50. May and June, 6 for \$4.00; dozen, \$7.50. Later, 6 for

\$3.50; dozen, \$6.50. Tested, 3-banded, \$1.25; 3 to 5 banded, \$1.50 to \$4.00. Send for circular for particulars. Make money orders payable here.

J. B. CASE, Port Orange, Vol. Co., Fla.

In responding to this advertisement mention GLEANINGS.

Good! Good!

Those wishing the finest and best business bees, both for pleasure and profit, should know that Jennie Atchley is headquarters for such queens. I breed both the 3 and 5 banded strains, at the following prices: Untested (March, April, and May), \$1.00 each; \$5.00 for 6, or \$9.00 per dozen. June till October, 75 cts. each; \$4.25 for 6, or \$8.00 per dozen. I breed my queens in separate yards, and I have as fine Italian bees as there are anywhere. Nuclei and full colonies. I have one straight merchandise ate on bees by express—lowest in U. S. Fine breeders always on hand; 3-banded, \$5.00; for straight 5-banded breeders, apply by letter. Also bees by the pound. I guarantee all my queens to be good and serviceable, and my fine faultless breeders unexcelled in the world. Safe arrival and satisfaction.

I also have a carload of A. I. Root's Dovetailed hives and Bee-supplies to accommodate my Southern customers. Dadant's foundation and Bingham smokers. Send for catalogue.

JENNIE ATCHLEY, Beeville, Bee Co., Texas.

NOW IS YOUR CHANCE.

To buy cheap. Bee-keepers' Supplies, hives, sections, fdn., etc. Write for price list. **ROOT'S GOODS.**
JOHN NEBEL & SON, High Hill, Mo.

The Triumph Incubator,

Manufactured by Ed. W. Cole, Kenton, O., is the cheapest and best. Eggs for hatching, from stock which won nearly 300 premiums the past year.

Send for Description and prices.

In responding to this advertisement mention GLEANINGS.

Tar-Heel Apiaries, Goldsboro, N. C.

Abbott L. Swinson, Proprietor.

After ten years' experience I breed only American Albino Italians and Golden Italians; 3 and 5 banded bees. Queens, \$1.00 to \$10.00; bees, \$1.00 per lb.; nuclei, 75 cts. per lb. frame, 200 bu. "Cook's" Long Staple Cotton Seed at \$1.00 per bu., f. o. b. Lint is 1 1/2 inches, and brings premium of 2 to 4 cents.

In responding to this advertisement mention GLEANINGS.

Trego on Deck

With those five-banded Golden Italian Queens for 1894; \$1.00 each. Circular free.

S. F. TREGO, Swedona, Ill.

Notice to Kansas Bee-keepers.

I keep in stock a full line of E. Kretschmer's make of Hives, Sections, and other supplies needed in the apiary, at very low prices. Also Italian bees and queens for sale. **A. W. SWAN, Centralia, Kan.**

For Sale An interest in iron-manufacturing business. Capital required, \$5000. Will take good paper or securities. An excellent trade taught in connection.

L. L. ESENHOWER, Box 331, Spring City, Pa.

BEE-MEN, Get free Price List of Apiarian Supplies.
F. N. JOHNSON, Knoxville, Ill.

Buff Leghorns, Bred from selected stock (American), old's, the best of layers, hardy and beautiful. Eggs from my best yard, \$2.00 per 15. **P. P. Forney, Hogestown, Pa.**

"TROT 'EM OUT!"

I challenge any one to show up a strain of bees that are superior to my **Golden Italians**. They have excelled all competitors by practical test. Gentle, industrious, good comb-builders, enter the sections readily, are not inclined to swarm, and are perfect beauties. Descriptive circular free. **Sections, \$2. per M.** Dovetailed hives way down.

CHAS. D. DUVAL, Spencerville, Md.

Please mention this paper.

FREE! My price list of pure Italian bees and queens, and white and brown ferrets. Address

**N. A. KNAPP,
Rochester, Lorain Co., O.**



Colorado Cactus, Known as "Hen and Chickens," red, waxy blossoms. One by mail, postpaid, 25c, or a group of 5 to 7 for \$1.00, by express. Grows in any climate. Beautiful ornament. Stamps taken. Address

R. E. & J. C. FRISBEE, 172 W. Maple St., Denver, Col.

A Big Bargain in S. C. B. Leghorn cockerels at \$1.00 each, from high-scoring birds. Eggs for hatching, \$1.00 per 13; also eggs for hatching from nine other varieties.

AUGUST GOETZ & SON, 3322 Wood St., Wheeling, W. Va.

Golden Wyandottes.

No better birds in America. Cockerel, \$5.00. Trio, \$7.00. Eggs, \$2.00 per setting.

E. D. Keeney, Arcade, N. Y.

Texas Cactus. Small one by mail, postpaid, 25 cts. Grows in any climate. Fine ornament. Stamps taken. **Miss Leah Atchley, Beeville, Bee Co., Tex.**

SEED Potatoes.—Freeman (small), \$1.50 for 90 lbs. Rural New-Yorker, Monroe Seedling, and American Wonder, \$1.50 for 90 lbs., large, with 1 lb. earliest potato known, free. Stock true; write for bulk lots. Premium Bronze Turkeys, Barred "Rock Leghorns" (eggs all winter). Stock not inbred. **S. J. Smith, Box 100, Padelfords, N. Y.**

For Sale. 50 colonies of bees, mostly Italians and hybrids; nearly all in Simplicity and Dovetailed hives—3 in American. **A. Y. BALDWIN, De Kalb, Ill.**

KIND WORDS FROM OUR CUSTOMERS.

GLEANINGS is getting better and better; guid luck tith, is the wish of your subscriber.
New Craighall, Scotland, Jan. 5. AND'W BUCHAN.

I wish to add my vote of thanks for the improvement in GLEANINGS since Jan. 1.
Millard, Neb., Feb. 8. MRS. A. L. HALLENBECK.

I received the goods ordered of you a short time ago. They are the finest I ever saw. The sawed wood separators are very nice. WILTON TAYLOR.
Onondaga, Mich., Feb. 2.

I like GLEANINGS very much, and would not do without it. I have 20 stands of bees in cellar, in good condition thus far. R. WOODWARD.
Montfort, Wis., Feb. 6.

I have seen some honey in this market stored in your goods, which surpasses any thing I had known before. I am somewhat interested in bees, and should like a catalog or price list of your hives and other fixtures. SOLON C. SMITH.
Jackson, Ohio, Oct. 9.

I am well pleased with GLEANINGS, and think every bee-keeper should take it. There is lots to learn. I always read "On the Wheel," but think I would rather be where I could help eat some of that celery than to read about it, as the grasshoppers ate our celery off close to the ground.
South Cayuga, Ont., Nov. 28. O. FATHERS, JR.

THE COWAN EXTRACTOR A BEAUTY.

My supplies have come to hand, all in good order. The Cowan extractor is a beauty, and I consider it very cheap at the price. The shoe-repairing outfit is good. It will save discomfort and expense, and should be in every household. Please accept my thanks for GLEANINGS for 1894.
WM. MUTH-RASMUSSEN.
Independence, Cal., Feb. 14.

This is an out-of-the-way place, and cotton is our only money crop. You can figure it out, and see that there is not a good living in it. I had 700 lbs. of extracted honey last year. The most I could get in New Orleans was 4½ cts. per lb., with freight, commission, and drayage deducted. So we used the most of it ourselves, thereby saving 40 cts. a gallon for syrup, and better health, I believe. Your writings and poor health together have caused me to quit smoking (the only way I used tobacco), and I find my health improved by doing so.
Ohio, La., Feb. 12. JOSEPH RYAN.

The goods ordered of you Jan. 18th, and shipped Jan. 25th, were received Jan. 30th in good order. Freight charges were moderate. I have unpacked most of the goods, and have not found any thing missing as yet. I am pleased with the change you made in the covers. I like the plan of having them double. I use painted muslin on my flat covers, supported about ½ inch above by strips of wood running crosswise of the cover, and extending about an inch on either side, giving a chance for the air to circulate under the muslin. S. FARRINGTON.
Corunna, Ind., Feb. 3.

OUR FOOT-WARMER.

My foot-stove has now been put to the test three times, and the first Sunday I used it I have ministered to a country congregation about seven miles out from here for over thirty years. I put in two sticks of fuel, and, though the weather was exceedingly cold I rode out in comfort with warm feet, and I left the stove under the robe while the services were in progress; and on my return the fire was out and a good big hole had been burned in the robe. I concluded it was my fault in giving too much air; so the next time I shut off the most of the air, and, being a warm day, one stick of fuel kept me warm until my return at night. Last Sunday I did the same, and came home with warm feet, and very comfortable otherwise. I find that one stick of fuel, in ordinary winter weather, is all I need, and that, with a very moderate draft, it will burn about six

hours, and keep one comfortably warm; so you can set me down as a convert to the foot-stove as admirably adapted to the wants of clergymen with country parishes which they are obliged to visit by private conveyance.
G. A. ADAMS.
Perryburg, O., Jan. 31.

THE TOMATO-BOOK; CANNING TOMATOES, ETC.

We have been engaged quite extensively in growing tomatoes for local and other markets, and think your book, "Tomato Culture," is by far the best that has ever been introduced. Your information in the book has been very valuable to me; but I have one fault to find—you stop too soon. Nearly every year there is a time when the markets are full, and prices too low for us to ship for a few days or weeks, and our fruit lies on the ground, and rots. Will you kindly write me where I can purchase a book, or get instructions for canning, or making ketchup from tomatoes?

Now you have told us how to raise tomatoes, I think you ought to tell us how to take care of them. Even a thousand bushels that go to waste nearly every year would, if properly canned, make a profit of itself. C. A. TURNER.

Macon, Ill., Jan. 23.

[In our issue of June 1, last year, you will find an article covering the question you ask, friend T.]

FROM PRESIDENT ABBOTT.

My Dear Mr. Root:—I want to congratulate you on the many good points in your reply to Mr. Farrington's letter. You have struck the keynote of success, in my opinion. You have also stated clearly the reason why a large number of people are out of employment. There are too many in this country working only for the wages they receive, with no thought of doing the very best they know how for the one who employs them. Then there seems to be so little know how in the world. We often say people are not to blame for what they do not know; but they are all the same when they could know just as well as not. One man can not know every thing; but many of them could know more than they do if they would only think so and make the effort. I mean, they could know more about how to do things as they should be done. If this little sermon of yours could be preached from every pulpit in the country, or put in pamphlet form and spread broadcast over the land, it could not fail to do a deal of good. I am sure it would be more profitable reading than the sentimental, paternal, socialistic trash that fills the columns of many so-called "reform" papers.
St. Joseph, Mo., Feb. 20. EMERSON T. ABBOTT.

TERRY'S NEW BOOK, "OUR FARM," ETC.

We clip the following from the *Rural New-Yorker*:

OUR FARM: We regard this book as the most interesting and instructive volume that has ever been written about American farm life. In fact there is nothing just like it in the English language. It is a story, an agricultural treatise, and an argument for a higher and better farming all in one. Those who have ever read Mr. Terry's articles know that he writes with a breezy earnestness that makes "easy reading," and carries conviction along with it. They will find the thought and argument in the book high-grade, soluble, and easy to digest and assimilate. Mr. Terry has long been famous for his methods of growing clover, wheat, and potatoes. He has no trade-secrets—the whole thing is described and laid bare for us in this volume. Tile drainage and the use of muck, skillful saving of manures—all the machinery of nature that man can oil and ovel-haul—are well treated in this book, which is, we repeat, the most interesting farm record we have ever read.

Now, I believe every word the *Rural* says; but I am a little surprised to see they give such extravagant praise to a book that does not agree with them at all in the use of chemical fertilizers. In fact, I sometimes feel troubled to see the *Rural*, week after week, give such tremendous puffs to these things, and perhaps I might confess that I also feel troubled to see the results of Terry's experiments, year after year, indicate so clearly that every chemical fertilizer he undertakes to use does just no good at all. I really wish we could put Terry on some sort of soil where fertilizers would avail. But I am afraid that, even then, he would get such tremendous crops of clover that the fertilizer would be thrown into the shade or into nothingness. And then the thing that troubles me again is, he would not use any sort of fertilizer to get the clover started. Now, T. B. Terry is certainly a great teacher; and the *Rural New-Yorker* is also another great teacher. How in the world can it be that their teachings, or, rather, their experiences, should differ so tremendously?

Revised Price List of Garden Seeds for March 15.

Please notice that any or all seeds mentioned below are sold in five-cent packages, postpaid by mail. For 10 papers ordered at one time, 40 cts.; 100 papers, \$3.50. Of course, scarce and high-priced seed will necessitate making only a very small amount of seed in a package; but by far the greater part of them contain a full half-ounce of good fresh seeds. By comparing these packages with those you get of many of the seed-men you will notice the liberal amounts we furnish for only 5 cts. It is true, we do not give presents or cash prizes; but we believe the most intelligent people of the present day would prefer to have their money's worth of what they ordered, rather than to compete for a prize. The five-cent packages are sent postpaid; but the price of all other seeds does not include postage; therefore, when you order seed by the ounce or pound, allow postage thus: 9 cts. per lb.; 5 cts. per $\frac{1}{2}$ lb., or 1 ct. per oz. Peas and beans by the pint and quart must also have 8 cts. per pint or 15 cts. per quart; for corn, add 12 cts. per quart for postage. Postage to Canada is double the above rates. One-fourth ounce, pound, or peck, will be sold at ounce, pound, or peck rates unless otherwise specified. In the enumeration below, no description of the seeds is given, as you may notice. Our complete catalog, with full description, will be mailed on application if you have not already received it.

ASPARAGUS.

Asparagus, Palmetto. Oz. 5c; lb. 60c.

Asparagus Roots. 1 year old. Palmetto, 10 for 10c; 50c per 100; \$4.00 per 1000. By mail, add 5c for 10, or 25c per 100.

BUSH BEANS.

Henderson's New Bush Lima Bean. $\frac{1}{2}$ pt. 10c; qt., 35c; peck, \$2.25; bushel, \$8.50.

Kumerle's Bush Lima. $\frac{1}{2}$ pint, 25c; qt. 75c.

Burpee's Bush Lima. $\frac{1}{2}$ pint, 20c; qt. 50c.

Kidney Wax. Pt. 15; pk. \$1.50.

White Kidney, Large. Pt. 10c; pk. \$1.25. Bu., \$4.50.

York State Marrow. The best field bean. Pint, 10c; peck, \$1.00; bush, \$3.50.

POLE BEANS.

Extra-Early Lima Beans. These are fully equal to the old Lima beans, and are fully as productive, and from ten days to two weeks earlier. We consider it an acquisition. Price, $\frac{1}{2}$ pt. 10c; qt. 30c; peck \$2.00.

King of the Garden Lima. $\frac{1}{2}$ pt. 10c; qt. 30c; peck, \$2.00.

All of our beans will be furnished in 5-cent packages; but where they are to go by mail, postpaid, of course the above packages will have to be quite small. If wanted by mail, add 8c per pt. or 15c per qt. for postage.

BEEFS.

Eclipse. Oz. 5c; lb. 40c; 5 lbs. \$1.50.

Laue's Improved Sugar. Oz. 5c; lb. 25c; 5 lbs. \$1.00.

Long Red Mangel. Oz. 5c; lb. 25c; 5 lbs. \$1.00.

CABBAGE.

Select, Very Early Jersey Wakefield. Stock seed. Oz. 20c; lb. \$2.50.

Henderson's Early Summer. Oz. 20c; lb. \$2.25.

Fottler's Brunswick. Oz. 20c; lb. \$2.00.

Excelsior Flat Dutch. Oz. 15c; lb. \$1.50.

Perfection Drumhead Savoy. Oz. 15c; lb. \$2.00.

Large Red Drumhead. Oz. 15c; lb. \$2.00.

CARROTS.

Early French Forcing. Oz. 5c; lb. 60c.

Orange Danvers, Half-Long. Oz. 5c; lb. 60c.

CAULIFLOWER.

Henderson's Early Snowball. Raised by H. A. March. $\frac{1}{2}$ oz. 25c; $\frac{3}{4}$ oz. 40c; oz. \$1.50.

CELERY.

Henderson's White Plume. Oz., 20; lb., \$2.50.

Golden Self-Blanching Celery. Oz., 20; lb., \$2.50.

New Rose. Oz. 20c; lb. \$2.25.

Dwarf Golden Heart. Oz. 15c; lb. \$1.75.

CORN (FOR TABLE USE).

Corn (except Ford's Early and Mammoth) we sell at 5c per half-pint package; but at this price purchasers must pay the postage, which is 3c for each half-pint. If wanted in larger quantities the price will be 15c per quart, 75c per peck, or \$2.75 per bushel.

Cory's Extra Early.

Ford's Early Sweet. $\frac{1}{2}$ pt. 8c; qt. 20c; pk. \$1.15; bushel, \$4.50.

Late Mammoth Sugar. $\frac{1}{2}$ pt. 10c; crop short.
Country Gentleman, or Improved Shoepeg.

CORN SALAD.

Oz. 5c; lb. 75c.

CRESS, OR PEPPER GRASS.

Extra Curled. Oz. 8c; lb. 60c.

CUCUMBER.

Early Frame. Oz. 5c; lb. 50c.

Improved Early White Spine, or Arlington. Oz. 10c; lb. 60c.

Green Prolific, or Boston Pickle. Oz. 5c; lb. 50.

LETTUCE.

Grand Rapids Lettuce. Oz. 15c; pound, \$1.75; 5 lbs. \$7.50. *This seed is from the originator, Eugene Davis.*

Boston Market (or White-seeded Tennis-ball). Oz., 10c; lb., \$1.00.

Henderson's New York. Oz. 10c; lb. \$1.00.

MELONS, MUSK.

Casaba, or Persian Muskmelon. Oz. 5 cts.; lb. 60c.

Extra Early Citron. Oz. 5c; lb. 60 c.

Banana. Oz. 5c; lb. 60c.

Emerald Gem. Oz. 10c; lb. 75c.

Miller's Cream, or Osage. Oz. 10c; lb. 75c.

MELONS, WATER.

Phinney's Early. Oz. 5c; lb. 60c.

Landreth's Boss. Oz. 5c; lb. 60.

MUSHROOM SPAWN.

Agaricus Campestris. Single lb., 15 cts.; 5 or more lbs., 12 cts. per lb.; 10 lbs. or more, 10 cts. Directions for raising mushrooms sent with each order.

ONION.

Yellow Globe Danvers. Oz. 10c; lb. \$1.00; 5 lbs., 90c per lb.

Large Red Wethersfield. Same prices as above.

Silverskin, or White Portugal. Oz. 25c; lb. \$3.00.

Prize Taker. Oz. 20c; lb. \$2.25.

White Victoria. Oz. 20c; lb. \$2.50.

American (Extra Early) Pearl. Oz. 25c; $\frac{1}{2}$ lb. \$1.90; lb. \$3.50.

Extra Early Red. Oz., 15 cts.; $\frac{1}{2}$ lb., 35 cts.; per lb., \$1.00.

ONION-SETS.

By mail 10 cents per quart extra.

Yellow Danvers. Qt. 20c; peck, \$1.50; bush, \$5.

Large size Yellow Danvers, one-half above prices. These are often used for pickles, but are also to be used for onion-sets; but the seed-stalks must be pulled off if they appear, if you wish them to make onions.

Silverskin. Qt. 30c; peck, \$2.00; bush, \$6.50.

Extra Early American Pearl. Qt. 35c; pk. \$2.25.

Winter, or Egyptian Onion Sets. Prices, 5c per qt., or 35c per peck; \$1.00 per bush.

White Multiplier. Price 10c per pint; 15c per qt; \$1.00 per peck, or \$3.50 per bushel.

PARSNIP.

Improved Guernsey. Oz. 5c; lb. 25c; 10 lbs., \$2.00.

PARSLEY.**Fine Curled or Double.** Oz. 5c; lb. 50c.**PEAS.****Alaska.** $\frac{1}{2}$ pt., 5c; peck, \$1.00; bush., \$3.75.**American Wonder.** $\frac{1}{2}$ pt. 8c; pk. \$1.75; bu. 6.50**Premium Gem.** $\frac{1}{2}$ pt. 5c; peck, \$1.00.

Much like Am. Wonder, but taller and more productive.

Stratagem. $\frac{1}{2}$ pt. 8c; qt. 25c; pk. \$1.75; bu. \$6.**Champion of England.** Pint, 10c; pk. \$1.00; bushel, \$3.50.

Peas by mail will be at same rate as beans for postage.

PEPPERS.**Sweet Spanish.** $\frac{1}{4}$ oz. 10c.; oz. 25c.**Bullnose.** $\frac{1}{4}$ oz. 10c; oz. 25c.**Cayenne.** $\frac{1}{4}$ oz. 10c; oz. 25c.**POTATOES.****Monroe Seedling.****Lee's Favorite.****Rural New Yorker.**

1 lb., by mail, 18c postpaid; 3 lbs., 40c; by freight or express with other goods, 1 lb., 5c; 1 pk., 35c; 1 bush., 1.00; per barrel of 11 pecks, \$2.50.

Early Ohio.**Early Puritan.**

Prices of any of the above: 1 lb., by mail, 25 cts.; 3 lbs., 60 cts. 1 lb., by express or freight, 10 cts.; 1 peck, by express or freight, 50 cts.; 1 bushel, \$1.75. Barrel, containing 11 pecks, \$4.00. If potatoes are ordered in the winter we will do our best to protect them from frost, but the purchaser must take all risk. At these prices we make no charge for barrels or packages, but deliver F. O. B. cars here in Medina.

Freeman.

LARGE AND MEDIUM SIZE.

One lb., by mail, 30c; 3 lbs., 75c; 1 lb., by freight or express with other goods, 15; 1 pk., by freight or express with other goods, 75c; 1 bushel, 2.00; 1 bbl. (11 pecks), 5.00. SECOND-SIZE Freemans, while they last, same price as Early Ohio.

Potato-eyes. Any of the above varieties by mail postpaid, 15c for 10; or 80c per 100.**RHUBARB.****Myatt's Victoria.** Oz., 10c; lb., \$1.00.

Roots, 10c each; 50c for 10; \$3.50 per 100. If wanted by mail, add 5c each for postage.

PUMPKIN.**Early Sugar.** Oz 5c; lb. 50c.**RADISHES.****Early Scarlet Globe.** Pkt. 5c; oz. 10c; lb. 60c**Wood's Early Frame.** Oz. 10c; lb. 75c.**Beckert's Chartist.** Oz. 5c.; lb. 40c.**Chinese Rose Winter.** Oz. 5c; lb. 40c.**SALSIFY, OR OYSTER PLANT.****New Mammoth.** From Sandwich Islands. Oz. 10c; lb., \$1.00.**SPINACH.****Bloomsdale Extra Curled.** Oz 5c; lb. 25c. 5 lbs. \$1.00.**SQUASH.**

SUMMER.

Giant Summer Crookneck. Oz. 10c; lb. 50c.

WINTER.

Hubbard. Oz. 10c; lb. 60c.**TOMATO.****Golden Queen.** Pkt., 5c; oz., 20c; lb., \$2.50.**Ignotum Tomato.** $\frac{1}{4}$ oz. 10c; oz. 25c; lb. \$2.50.**Livingston's Beauty.** Oz. 20c; lb. \$2.00.**Dwarf Champion.** oz. 20c; lb. \$2.50.**Livingston's New Stone Tomato.** Oz 25c; lb. \$3.00. A very fine large tomato for main crop.**Early Ruby.** Per oz., 20 cts.; lb., \$3.00.**Buckeye State.** Per $\frac{1}{2}$ oz., 3) cts.; oz., 50 cts.; $\frac{1}{4}$ lb., \$1.60; lb., \$5.25.**Pear-Shaped Tomatoes.** Oz. 20c; lb. \$2.50.**TURNIP.****Extra-Early Turnips.****Purple-top White-globe.** Oz. 5c; lb. 40c; 5 lbs. \$1.50.**Yellow Aberdeen.** Oz. 5c; lb. 40c.**Wreadstone.** Oz. 10c; lb. 60c.**White Egg.** Oz 5c; lb. 40c.**A. I. ROOT, Medina, Ohio.**

Note the reduction in price of all potatoes except the Freemans.

CARLOAD ORDERS.

As we go to press we are loading a car of goods for export to Australia. This goes in several consignments to different firms. About two weeks ago we sent a half-car order in one shipment. We are also shipping a carload of hives, sections, smokers, and other goods, to Walter S. Pouder of Indianapolis, where many of the supplies we make may be had at our prices.

THREE-EIGHTHS-INCH PATTERN-SLATS.If any of our readers use or prefer slotted section-holder bottoms $\frac{3}{8}$ inch thick we can supply you from stock at the same price as our regular size $\frac{1}{2}$ inch thick, 60c per 100, or 500 for \$2.50. These are $1\frac{1}{2}$ inches wide, 18 inches long, slotted for four $4\frac{1}{4}$ -in. sections. Price, with $\frac{1}{2}$ -inch end-blocks, double above rate. Remember, these can not be used in our regular Dov. super without destroying the bee-space above.**NEW GLEANINGS BINDER.**

We have for several years been using in our office a binder which came from England, which we have liked very much better than the Barrett binders we have been selling. We have tried for over two years to find where the same kind of binder could be had in this country. We recently found what we wanted, in Boston, and now have 100 of them in stock. We expect to give a cut of it in next issue, showing how it works. They cost a little more than

the old kind. The price will be 65c each for all cloth, or 75c for cloth with leather corners and back. All are nicely lettered in gold on the back, and on the front cover "GLEANINGS IN BEE CULTURE." Postage extra, 17c each. There are 24 steel strips threaded on to a wire at each end. The journals are held in the binder by one of these strips passing through the center. No holes are punched, and it is the work of a moment to remove and replace any one or all of the journals when desired.

HONEY MARKET.Our stock of choice comb honey was all shipped soon after our last issue was mailed. We expect to have a further supply soon, but the price will be 15c per lb. for choice in 100 lb. lots. For smaller lots, 16c. We have about 300 lbs. of fair honey, which cost us 14c last fall, but which we offer for 15c now; also 200 lbs. of buckwheat at 11c per lb. All this is in 1-lb. sections. We have 3 cases of fancy white, $1\frac{1}{2}$ -lb. sections, which we will sell at 14c per lb. For extracted honey we quote the same prices as in the last issue, as follows:Choice clover and basswood extracted, in 200-lb. kegs or barrels, at 7 $\frac{1}{2}$ c; in 60-lb. cans, 2 in a case, 8c. Choice white-sage honey, in 60-lb. cans, 2 in a case for 7 $\frac{1}{2}$ c.**GALVANIZED WIRE CLOTH.**

We are now using in our extractors a wire cloth with a pure zinc finish, galvanized after being woven, four meshes to the inch, and No. 22 wire. It is stronger than the tinned cloth we have used for years, and has larger meshes. The greater strength is due to the fact that the wires are joined, where they cross, by the coating. There is nothing in this coating that is detrimental, as the same kind of cloth is largely used for fruit-drying, where the acid of the fruit is left for a long time in contact with the wire, yet the manufacturer of the cloth agreed to eat at one time all the poison there might

be in a hundred barrels of such fruit. He thus proved his confidence in the harmlessness of the coating, which is of pure zinc, and different from the coating generally used. Besides this 4 mesh, we have also 6 mesh to the inch in stock. We can furnish it in cut pieces at 6c per square foot, or full rolls, 100 feet long, at 45¢ per sq. foot. Our stock is 30 and 36 inches wide. We can ship from New York or Chicago, any width desired, at above figures.

MAPLE SUGAR AND SYRUP.

The delicious sweets from the sugar maple are being gathered in this vicinity. Not much has yet been brought in, but we expect very soon to have enough to supply all orders. We have orders in already for about a ton of sugar, and have shipped two lots of syrup. Our prices on sugar will be the same as in former years—10c per lb. for best grade; 9c for No. 2, and 8c for No. 3; $\frac{1}{2}$ c less in 50-lb. lots, or 1c less in 300-lb. lots. We can offer syrup a little lower this year.

Choice syrup in one-gallon cans will be \$1.00 per gallon; in 10-gallon lots or more, 90c. Those desiring to buy in quantities will do well to write us. The weather is such that the crop here promises to be short.

STICKEMFAST MUCILAGE.

We have at last got a preparation that will stick labels to tin, and keep them stuck indefinitely. Most preparations heretofore would seem to stick them all right, but after a little they would pop off. There is one great drawback to this. It comes in dry or granular form, and must be prepared for every two or three days' use, as it will not keep longer than three or four days and do its work. If prepared and applied fresh, according to directions, it will stick labels securely to tin or wood, and hold them. When used to stick two papers together they do not become hard, and crack, as with other mucilage, but remain pliable.

An ounce of the dry powder makes a pint of mucilage, which will stick a good many labels. Price of Stickemfast, including full directions for preparation, 1 oz., 15 cts.; 2 oz., 25 cts.; 1 lb., \$1.25. Sent postpaid at these prices.

LATHYRIS SILVESTRIS, WAGNERI.

Dr. Miller, I very humbly beg pardon. I did see that straw, but *Lathyrus silvestris* did not mean any thing to me just then; but now it wakes me up quicker than greenhouse, strawberry, or any thing else. But what did you put that last part on for—*Wagneri*? Is not *Lathyrus silvestris* bad enough without more Latin? Never mind. We have got a little bag of seed, and it is going off some in five-cent packages. A. I. R.

EXTRA EARLY AMERICAN PEARL ONIONS.

At this date, March 9, the sets planted last September have wintered over better than ever before. Our severe freezing weather even without snow, does not seem to have injured them at all, neither are any of them thrown out by the frost. The plot of ground where they were planted was very heavily manured, and after the fall rains they sent their roots down to such a depth that the frost seems to have had no effect on them. They are on our creek-bottom ground; and although a part of the piece was under water once or twice it seemed to have sustained no injury. I do not quite understand why they do so well in our locality and do not endure the winters in other localities.

OUR TIMBRELL STRAWBERRY-PLANTS.

You know we succeeded in saving scarcely half a dozen plants last year from the plants we purchased. There were, perhaps, three good ones; one more that might be called half a plant, and another that barely made a "live." We did our best in increasing them last season, and succeeded in getting what are now 322 strong vigorous plants. Twenty of these are in the greenhouse, where the flower-buds have been picked off day by day for perhaps a couple of weeks past, and we are rejoiced to find that one plant has started a runner nearly an inch long. By pulling off the flower-stems you can get them to put out runners under glass. We do not propose to offer any plants for sale until we get good strong sets from the runners—say some time in July. Now, then, how many plants can we make of our 322 before snow comes again?

This is beautiful March weather. As we go to press this has been the most sunshiny March I think I ever saw in my life. The roads are now hard enough so I propose to soon start out on a wheeling-trip. We have planted largely of peas; some beets, radish, cabbage seed, and other hardy things, outside. The bees are bringing pollen from the soft maples; and if we do not get some blizzards, the outlook is a grand one; and even if the blizzards do come, we have had good roads and dry weather so that general gardening and farmwork ought to be well in hand. A. I. R.

SPECIAL SECTIONS AT SPECIAL PRICES.

Although we have sold quite a number of these, yet we find that we still have in stock the following list of No. 1 white sections, such as we have sold for best until this season, and which are as good as or better than the best made by all but possibly two or three leading manufacturers. We offer these, while they last, at \$2.50 per 1000; 2000 for \$4.50; 3000 for \$6.50, or 5000 for \$10.00. At the rate they have been going they are not likely to last long. When these are gone we shall have none but our extra polished sections to offer, and the No. 2 grade selected from them in manufacturing. The sizes on hand here are as follows:

23,000	4 $\frac{1}{4}$ x4 $\frac{3}{4}$ x1 $\frac{1}{2}$	open four sides.
50,000	" "	1 $\frac{1}{2}$, open top.
4,000	" "	1 $\frac{1}{2}$, closed top.
6,500	" "	1 $\frac{1}{2}$, open four sides.
14,000	" "	1 $\frac{1}{2}$, open top.
9,000	" "	" closed top.
32,000	" "	7 to foot, open top.
6,000	" "	7 to foot, closed top.
4,000	" "	7 to foot, open four sides.
28,000	" "	1 $\frac{1}{2}$, open top.
12,000	" "	open four sides.

Besides the above we have at Bankers, Hillsdale Co., Mich., the following, which are offered at the same prices:

33,000	4 $\frac{1}{4}$ x4 $\frac{3}{4}$ x1 $\frac{1}{2}$	open top.
15,000	" "	1 $\frac{1}{2}$, open top.
40,000	" "	1 $\frac{1}{2}$ and 7 to foot, open top.

All No. 1 white, made two years ago, and choice sections. Send orders for these to us here at Medina.

In our stock at St. Paul, Minn., with H. G. Acklin, 1024 Miss. St., we have about the following quantities of No. 1 white sections, which we offer at the same prices. Send orders to above address for these or any other items needed in the line of bee-keepers' supplies. There is a full stock ready for prompt shipment, but none of our new sections are in stock there yet.

18,000	4 $\frac{1}{4}$ x4 $\frac{3}{4}$ x7	to foot, open top.
30,000	" "	1 $\frac{1}{2}$, open top.
8,000	" "	1 $\frac{1}{2}$, open top.

Also of No. 1 cream, at same price as on stock here named below, the following:

9,000	4 $\frac{1}{4}$ x4 $\frac{3}{4}$ x1 $\frac{1}{2}$	open top.
10,000	" "	1 $\frac{1}{2}$, open top.

Of No. 1 cream and seconds, from our new extra polished sections, which are about equal in value, we have in stock here the following, which we offer at \$2.00 per 1000; 3000 for \$5.70; 5000 for \$9.00.

5,000	4 $\frac{1}{4}$ x4 $\frac{3}{4}$ x2	open top.
6,000	" "	2 open four sides.
37,000	" "	1 $\frac{1}{2}$, open top.
7,000	" "	1 $\frac{1}{2}$, open top.
12,000	" "	7 to foot, open top.

Of other sizes of No. 1 white sections we have the following at the price annexed:

1500	5 $\frac{1}{4}$ x5 $\frac{1}{4}$ x1 $\frac{1}{2}$	closed top, at \$3 00 per 1000.
2500	" "	1 $\frac{1}{2}$, open " " 3 00 "
2500	5 x6 x1 $\frac{1}{2}$	" " " 3 00 "
700	5 $\frac{1}{4}$ x5 $\frac{1}{4}$ x1 $\frac{1}{2}$	" " " 2 00 for lot.
9000	6 $\frac{1}{4}$ x5 $\frac{1}{4}$ x2	" " " 3 00 per 1000.
1500	" "	1 $\frac{1}{2}$, " " 3 00 "
4500	" "	1 $\frac{1}{2}$, " " 3 00 "
6500	5 $\frac{1}{4}$ x6 $\frac{1}{4}$ x1 $\frac{1}{2}$	" " " 3 00 "
2000	" "	closed top, " 3 00 "

The above are all choice fresh sections, and a bargain at the price. We have, besides, a lot of odds and ends too numerous to list here, of which we shall be pleased to mail a list of sizes, quantities, and prices at which we will close out, to any one who is interested, and sends us a request for it. You may find in it something you can use at trifling cost.